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# MINNESOTA MEDICINE

*Journal of the Minnesota State Medical Association*

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SEPTEMBER, 1921

## CONTENTS

### ORIGINAL ARTICLES

- JOHN M. DODSON, M. D., Chicago—Continuation Study for Practitioners: The Out-lying Hospital as a Study and Teaching Center..... 525
- ARNOLD SCHWYZER, M. D., St. Paul—Radium; Its Therapeutic Uses in Surgery.... 533
- CARROLL A. NYE, Judge, Moorhead—The Medical Expert Witness... 539
- VERNE C. HUNT, M. D., Rochester—Surgery of the Prostate..... 541
- F. C. RODDA, M. D., Minneapolis—General Therapy in Diseases of Children..... 543
- ARTHUR T. LAIRD, M. D. Nopeming—A Comparison of Some Municipal Health Budgets ..... 552
- IVAR SIVERTSEN, M. D., Minneapolis—Post-Operative Intestinal Obstruction..... 559
- H. A. BRANDES, M. D., Bismarck—Spinal Cord Manifestations in Pernicious Anemia 564
- WALTER R. RAMSEY, M. D., St. Paul—Recent Progress in the Diagnosis and Treatment of Congenital Syphilis in Infants and Children..... 568

(Continued on Advertising Page III.)

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## ORIGINAL ARTICLES

### CONTINUATION STUDY FOR PRACTITIONERS. THE OUTLYING HOSPITAL AS A STUDY AND TEACHING CENTER\*

JOHN M. DODSON, M. D.

Dean of the Medical School, University of Chicago.  
*Chicago, Ill.*

The field of medicine is so vast and progress in the medical sciences so rapid and continuous that a physician must be an earnest student every day of his active life if he is to render his patients that service which modern medicine makes possible and which they have a right to expect.

Much of this study is accomplished by the diligent reading of medical journals and books;—the physician, too, finds aid and stimulus in discussion and conference with fellow physicians in society meetings.

But these methods do not alone suffice. He must, at intervals, withdraw from the distractions of his routine practice, and devote himself intensively for a few weeks or months to the systematic study of the medical sciences and their application to the practice of medicine.

It was the recognition of this need by many physicians and their demand for suitable opportunities for such study, that led some of the medical colleges forty years ago to institute lecture courses for practitioners of medicine, given, usually, after the close of the regular winter courses for undergraduates. This movement was followed by the organization of Postgraduate or Policlinic schools of medicine in several of the larger cities where

clinical material, in hospitals and dispensaries, was ample for the only kind of instruction then in vogue. These schools have continued during the past 35 years and have increased to the number of 14 or 15. For the last few years their students have been, in large part, physicians who wished to qualify, in a few weeks, course, for the practice of some specialty,—conspicuously, Oto-Laryngology and Ophthalmology. Some of the undergraduate medical schools have continued to offer special courses for practitioners, usually for a few weeks in the spring or summer, but most of them, finding their resources taxed to the limit by their undergraduate students, have given up the effort to make special provision for physicians.

The opportunities offered for continuation study of this sort have always been inadequate and unsatisfactory both in kind and amount. Previous to the outbreak of the World War the more ambitious physicians sought such opportunities abroad. This inadequacy of resources for postgraduate medical study was strongly emphasized at the close of the War. Many doctors, returning home from the service, and desiring to equip themselves more thoroughly for return to private practice, found it impossible to secure the opportunities which they sought. It will be a long time, moreover, before European schools will again be able to give such instruction as they offered previous to 1914.

On the other hand, it is quite certain that we have in our own country ample material and a sufficient number of competent instructors in the many and rapidly increasing number of well-manned, well-equipped hospitals. It is necessary only to organize these hospitals as continuation study centers for physicians.

The physicians who seek postgraduate work may be most conveniently classified in three groups—(1) Those seeking facilities for ad-

\*Presented before the annual meeting of the Northern Minnesota Medical Association, Detroit, Minn., May, 1921.

vanced and research work as graduate students in the accepted university sense: (2) Those desiring to fit themselves, adequately, for the practice of a specialty and (3) Those who expect to remain in general practice but seek to refresh their knowledge of the old, and to acquire knowledge of the newer facts and methods in medicine.

The first group can find, with rare exceptions, suitable provision only in a University graduate or medical school, or, if sufficiently competent and well-prepared, in one of the independent institutions devoted to medical research, although it is hardly necessary to remark that a good deal of admirable research is being carried on in detached hospitals by members of their staffs.

It may be said of this group that the number is small, though happily increasing and that the demand for such workers far exceeds the supply. There is ample room for all who are competent in the existing University Schools. These institutions have many applications from would-be investigators who lack the necessary training and qualifications for such work.

The second, or specialist group, as yet has numbered too few physicians who are willing to devote the necessary time and effort to fit themselves thoroughly for special practice. One of the most vicious of the sins which have been perpetrated in the name of medical education has been that of the so-called polyclinic and postgraduate medical schools in offering courses of six to twelve weeks (sometimes as brief as three) in preparation for specialism. Such courses rarely make any pretense to do more than teach operative technique. The very much more important matter of a thorough education in the pathology, diagnosis and the relationship of the disease of the parts involved in the particular specialty has been almost wholly neglected.

Adequate training for any of the special branches cannot be accomplished in less than two years—better three—of exclusive devotion to the subject under competent instructors with ample material and equipment. The number of persons needed annually to supply the ranks of specialism is not large—probably not over 500 or 600 in all,—if we exclude Preventive or State Medicine,—and provision can

be made for the education of this group in the better equipped medical schools and the polyclinics, provided the latter are completely reorganized on correct lines.

In this connection it should be said that altogether the most adequate and satisfactory plan of education for special practice is that now in operation in the graduate school of the University of Minnesota and the Mayo Clinic. The generous endowment of the Mayo Foundation has made it possible to establish fellowships with a living stipend, so that the fellows can be selected without reference to their financial circumstances, but solely on the ground of merit.

The problem of making suitable provision for the education of specialists has been the subject of exhaustive study by the Council on Medical Education and Hospitals of the American Medical Association and was the theme of the annual conference held in Chicago last March. Many important contributions have been made to these discussions and this problem seems to be fairly on the way to a satisfactory solution.

There remains the third, or general practitioner group, many times the largest and in many ways the most important. If the university medical and graduate schools, the Research Foundations and the reorganized polyclinic schools take care of the graduate students and the specialist types of training, as well as of the education of the undergraduate medical students, they have, for a long time to come, all that they can effectively accomplish. As Dr Wilbur, President of the University of California has said,—“If these institutions do the work which they are now doing, the medical profession must itself provide the facilities for continuation study for the general practitioner in hospitals not as yet engaged in teaching. Indeed the medical schools are already so overtaxed with the instruction of undergraduates that the teachers of the fundamental branches have declared with emphasis that they cannot undertake to give instruction in these subjects to physicians fitting themselves for special lines of practice. It will be necessary to appoint special instructors for this purpose, probably for the most part, from younger men in the special departments of these schools.”

To meet the demand of the general practi-



tioner in providing facilities for continuation study or "brushing up" courses in the several medical branches, the organization of the outlying hospitals is the only solution now apparent and is one of the most important problems confronting the medical profession. It demands, first of all, a more thorough and comprehensive survey of the hospitals of this country than has yet been made, and a general elevation of the standards of hospital practice.

What sort of opportunities should be afforded the general practitioner by such a teaching or study center? That, of course depends on what the average doctor needs and seeks in such continuation study.

*First* of all, he needs opportunity for review of the fundamental medical sciences and for study of the newer facts and methods as much or more than he needs work in the clinical branches. The physician who has not at his command a reasonably accurate and thorough knowledge of anatomy, both gross and microscopic, of embryology, neurology, physiology, biologic chemistry, pharmacology, bacteriology and pathology is not equipped for the efficient practice of his profession. Moreover, it is these branches which are so easily forgotten and a knowledge of which it is so difficult to keep fresh and up-to-date through mere reading of journals and books by one's self. One needs the stimulus and helpful aid of fellow students, competent instructors, and first hand contact with material.

*Second*—He needs practical and laboratory work under supervision and, in connection with these, access to a library rather than didactic lectures, quizzes or even clinics, if one means by that, as is usually meant, the presentation of patients or the performance of operations in an arena before large groups.

*Third*—In the clinical subjects he does *not* need training in the technique of major operations in surgery or any of the surgical specialties, aside from that which will enable him to handle surgical emergencies. Note that we are here discussing continuation work for the general practitioner—the family doctor,—who has no thought of becoming a "specialist,"—that is, of limiting himself in the future to the practice of a single department of medicine; but who expects to return to a life of general

practice. Such a physician has no moral right to attempt major operations, demanding comprehensive pathologic and diagnostic knowledge and great technical facility which can be secured only by exclusive devotion to a limited field of medicine. When a general practitioner has satisfied himself that a major operation is necessary in a given case—not one of emergency,—he must, if he is an honest, properly minded doctor, ask himself this question: "If this patient were my wife, my daughter, my mother, my son,—or any one near and dear to me, would I (aside from any handicap of personal emotion) choose myself as the best person available to do that operation?" With rare exceptions, the answer to that question must be in the negative, for the family doctor, who has opportunity to do such an operation but once, twice or at the most a few times in a year cannot possibly attain to that degree of accuracy in diagnosis, perfection of technique and ability to cope with unexpected complications and contingencies which alone make surgical work reasonably safe and successful.

It is true that the economic pressure on the general practitioner is, in our day, tremendous,—the temptation to undertake major surgical operations for the fees to be had, very great, and the exasperation on witnessing the collection of a fee by the surgeon, for a few minutes of work—several times that of the attending physician for many days or weeks of service—well nigh insupportable. But these considerations are no warrant whatsoever for subjecting a patient to a serious operation by unskilled hands, sacrificing his health and often his life. The marvelous accomplishments of modern surgery rest primarily on the discovery of the facts about wound infections by Pasteur, and the development of clean surgery by Lister and his followers. But a chief factor in these accomplishments is the experience and skill attained by men who rigidly limit their activities to the field of surgical work in some particular line. Specialists have not taken from the general practitioner work which he had before, but specialism has made it possible to give help to the sick in ways and by means which did not before exist. On the other hand, specialism is responsible for an enormous number of needless, unjustifiable and often mutilating

operations. One of the chief functions of the family doctor is to guard his patients against the biased, unwise insistence of the specialist who urges an operation which is not indicated. The final decision as to whether or not an operation should be performed in a given case, should rest with the family doctor.

It is true that the work falling to the family doctor has been greatly curtailed in the last 30 or 40 years by the great accomplishments of preventive medicine and in part by the perfection of surgical procedures which restore promptly to health patients who formerly had to endure long continued and sometimes permanent invalidism. It is likewise true that the sources of revenue of the family doctor have been markedly lessened. He has good reason to feel that the great discrepancy between his fees and those commanded by the specialist, is unjust. But the remedy for this does not lie in his undertaking work for which he is not trained nor in the secret dishonest splitting of fees with the surgeon. He must restrict his work to those functions which he is competent to perform.

Incidentally may I here remark that I question seriously whether the family doctor will not, in the future, find his greatest usefulness in the field of preventive medicine, as the health adviser of his clientele, receiving his major compensation in the form of annual fees for keeping his patients well.

Pardon this digression, but in a discussion of what the general practitioner needs and is to seek in such Continuation Study Centers as are here described, it is essential to know just what type of work he is fitting himself for.

*Fourth*—These practitioners must have courses so arranged that they may be covered by intensive work in short periods, as contrasted with those offered in the undergraduate medical school. They must be long enough really to accomplish something worth while,—certainly not less than six weeks, much better three months—but few physicians will feel able to remain longer away from their practice than six months.

What are the essential features which a hospital should possess in order to meet these needs of the general practitioner?

It must have, *first*, the material equipment of

good laboratories, with a competent pathologist in charge, an x-ray equipment with a capable roentgenologist and a sufficient number of patients, especially in the medical group.

*Second*, it must have an organized responsible staff of capable physicians, willing to devote the necessary time and attention to the supervision of these practitioner students.

*Third*, it must have a good library, well equipped with the better medical journals and the standard modern medical monographs. It is a great advantage to have a competent librarian, familiar with the library, on hand, at least, for a few hours each day, preferably in the evening.

*Fourth*, a definite schedule of work for each student should be arranged by an administrative officer,—call him dean, registrar, secretary, director, or what you will,—so that each practitioner student may know where he is to be and what he is to do every hour of the day, and thus avoid waste of time.

For the matter of the fundamental medical sciences, some member of the staff, preferably one of the younger surgeons must be willing to keep his knowledge of anatomy fresh and up to date, and to direct the work of these post-graduate students in this subject. As to material for this study,—with anatomy acts on the statute books of most of the States it should not be impossible to secure an occasional cadaver for dissection and for work in operative surgery on the cadaver. Possibly for most practitioners actual dissection may not be desired but rather a study of carefully dissected parts. The modern methods of preservation of such material with glycerine, phenol and alcohol, and their subsequent immersion in liquid petrolatum, as suggested by Professor Meyer of California, make indefinite preservation possible. With these dissected parts, cross sections preserved in formalin, wax and *papier mache* models, skeletons, articulated and disarticulated, good anatomical atlases and text books, the student can review his anatomy very satisfactorily. Instruction in histology, embryology and neurology may be undertaken by the same or some other members of the surgical staff and the necessary microscopic slides, models and other illustrative material can be accumulated without serious difficulty.

That the undertaking of such instruction by members of the surgical staff will be of the greatest possible advantage to them in their own work, goes without saying. And, further there is distinct advantage in having the supervision of such work in the hands of a surgeon who is a daily student of living anatomy in his operative work. Living anatomy is quite a different thing from the anatomy of the dead body, and, needless to say much more important for the physician.

Similarly some internist on the staff should give instruction in physiology and another in biologic chemistry and in these branches the instruction should be, in so far as possible, of the laboratory sort, where the student does his own experimenting and has first hand contact with apparatus and materials. For example, when the sphygmomanometer was first made available for use by the general practitioner, how readily one might have secured a knowledge of the physiology of blood pressure, of its diagnostic significance and of the mechanism and methods of use of the several types of blood pressure apparatus in a brief course of demonstration and actual practice in a hospital. More recently, the method of determining metabolism rate by the estimation of oxygen consumption, as elaborated by Benedict and others, has been so simplified as to be available at any bedside or in any office.

The determination of renal insufficiency by the estimation of phenol-phthalein elimination is not beyond the accomplishment of the general practitioner, nor, likewise, the quantitative determination of sugar elimination and that of the acetone bodies in diabetes.

The study of bacteriologic procedures such as the detection of pathogenic microorganisms in the secretions from throat, nose and ear, the vagina or from wounds, in the urine and spinal fluid, the chemical examination of the urine, the routine examination of the blood including the counting of blood corpuscles, estimation of hemoglobin, differential count of leucocytes, and even blood cultures, as well as the examination of feces, for occult blood, the ova of parasites and other pathologic items, are all within the scope of the family doctor if he only have sufficient knowledge and training. Instruction in these matters falls naturally to the hospital

pathologist who must be on a full or part time basis, not only for the efficient instruction of such students, but as well for thorough clinical work in the hospital. Laboratories for clinical diagnosis, State, County, Municipal and private, now undertake such procedure for physicians who have access to them, but many family doctors have not, and for these the only recourse is to undertake these laboratory procedures themselves. Each physician must decide for himself what of these laboratory methods are within the scope of his equipment, time and ability but he cannot safely leave them to an office attendant, having no general medical training, but only a brief course in laboratory technique at some polyclinic where such courses are given. The custom of sending an office attendant to take such a brief course in technique and subsequently relying on her findings for a diagnosis has spread rather rapidly in the past few years, and, as often practiced, is thoroughly bad. It is helpful and proper for the physician to have the assistance of such an attendant in preparing some of the materials for such laboratory procedures, but the examination of the end results he should make himself and he can safely arrive at a diagnosis only by considering these laboratory findings in connection with the clinical history and physical findings at the bedside.

Every physician should learn how to perform an autopsy, and a practical course in post-mortem technique should be offered by the hospital pathologist. One of the principal defects in the training of the average American physician has been neglect of pathology, and especially of that very important aspect of pathology, pathologic anatomy. No conscientious, capable physician ever neglects to secure an autopsy on one of his patients who has died, if it is possible to secure such. The prejudice which is quite general in this country against post-mortem examinations, is in striking contrast to the universal consent and request for such examination in some foreign countries. This prejudice can never be overcome except by the education of the public to the importance of such procedure in unravelling the mysteries of disease and in educating the physician. It is noteworthy that some physicians are almost uniformly successful in securing the consent of relatives and

friends to autopsies. What some doctors do others can do by the exercise of proper tact and persistence. The physician is much more likely to make such a request and to secure consent if he has had practice in making autopsies and feels that he can expose and examine the tissues and organs properly and thoroughly, and is competent to recognize the pathologic changes which are disclosed. He should at least be able to remove the organs by methods such as that recently described by Dr. Le Count, so as not to obscure the changes which have occurred as the result of illness, in order that when these are properly preserved and forwarded to an expert pathologist he may be able to determine all of the pathologic changes which have occurred. Such knowledge is of vital importance in medico-legal cases.

Coming now to the clinical branches certain matters are fundamental to the efficient practice of them all, and the first of these is that of clinical history writing. Accurate, thorough, and comprehensive clinical records of every patient are a *sine qua non* for good practice. The presence or absence of such records is the very best criterion of the kind of work which is being done in a hospital and they are quite as essential in house to house practice. And yet it is deplorable how few physicians keep such records. Instruction in the writing of case histories is one of the most important courses which the hospital can offer to the general practitioner. The course need occupy but a few hours. The task of writing the anamnesis can be lessened by the use of abbreviations although it still remains for some one to devise a list of such abbreviations for universal adoption.

In the subsequent daily record of the patient's progress some plan of making all entries on the temperature chart by signs and abbreviations with occasional foot notes, such as has been suggested by Hess and others, makes for time saving both in the entering and subsequent reading of the clinical history. In such a plan entries of facts observed such as pulse, respiration, weight, findings of blood, urine, stools and the like are entered above the base line of normal temperature while things done for the patient, medicine given, baths, changes of diet

etc., are entered below the line, using foot notes where necessary.

Physical examination is likewise an imperative essential for every physician, specialist or otherwise. In this art it is quite likely that many family doctors are more proficient than their hospital confreres, excepting the internists, but opportunity to practice the methods of physical diagnosis under the supervision of an internist who is an expert should add to the physician's skill and acuteness and make him more certain of his findings. It should be emphasized, especially to the younger physicians that physical examination by the unaided senses is still, with an exhaustive, accurate case history, the main pillar of diagnosis, and an art that needs to be diligently cultivated. The inclination to magnify the laboratory and x-ray findings and the other refinements of diagnosis has grown of late years and needs to be strongly combated.

In internal medicine the diseases and conditions which especially interest the practitioner student are so numerous and varied that it is impossible and unnecessary to enumerate them in such a discussion as this. What the particular students may observe at any particular time depends largely on what clinical material is available in the hospital where they are at work. The opportunity to study with the clinician, patients in the wards and the out patient department, to observe his methods of procedure, to have first hand study of these cases under his supervision, aided by the findings of the several specialists whose assistance may be invoked and then to round up all the findings in a critical, final diagnosis: this is the real need of the practitioner as it is of the undergraduate student.

In pediatrics the outstanding topics are infant feeding with emphasis on the enormous advantage of breast as contrasted with artificial feeding, the care of the normal infant and the instruction of the mother by methods of infant welfare clinic, and the study, where clinical material is available, of the communicable diseases, with special reference to their early diagnosis and the prevention of their spread.

The infant welfare clinic, as conducted for



the poor has been such a tremendous factor in lessening infant mortality that its methods are being more and more adopted in private practice, mothers of well-to-do families bringing their infants to the physician at regular intervals for observation and for instruction in their proper care. This is preventive medicine of the best sort and yields as it should, a considerable income to the family doctor who educates his clientele to pursue this policy.

The psychiatrist or neurologist on the staff should offer courses in the diagnosis and management of insanity, wherever clinical material for this purpose is available in public or private institutions for the mentally afflicted. Very few physicians indeed have had any education of moment along the line of insanity. Every general practitioner should at least be able to make a tentative diagnosis of the type of insanity present in a given case, to advise as to the need of institutional care and to recommend the best institution available for that patient.

Surgery and the surgical specialties, gynecology, orthopedics, genito-urinary, oto-laryngology, ophthalmology, etc., have heretofore offered the major portion of the courses given at the polyclinic and postgraduate schools, and yet these branches, as they have usually been taught, are of the least importance to the family doctor. He does need the surgery of emergencies, fractures, dislocations, cutting, lacerating and crushing injuries and the infections which may complicate them, as well as the surgery of acute strangulated hernia, and acute appendicitis with threatened rupture. Thorough training along these lines with frequent refreshing and renewal of his knowledge of anatomy is of importance for two reasons,—(1) Emergency surgery is the one kind of surgery which he cannot escape and which alone, therefore, he is justified in doing, and (2) it demands surgical knowledge which he must have at instant command. He cannot set the operation for a week or ten days in the future and then proceed to fortify himself by reading up his anatomical and surgical text-books or by practicing the operation on cadaver or on animals. The life of the patient or at least his future health and the usefulness of the injured members, hinges often on what is done by the physician within a brief period immediately

following his first sight of the patient. He must have also a highly developed "aseptic conscience" and a command of the aseptic technique which is never perfect until it has become a fixed habit, so that the several steps in the process are automatic.

His desire to see major operations,—not of emergency type, and to observe the results of such operations in the relief and cure of the conditions for which they are done, is natural and proper, but any attempt to instruct him in the technique of such procedure is time worse than wasted, as has already been emphasized. In the matter of the surgery of accidents which is so essential, the railway and industrial hospitals present especially good opportunities.

Courses of instruction in the surgery of special parts, such as on the tonsils, nasal septum, turbinates and sinuses, on the mastoid or other portions of the ear,—on the eye, the pelvic viscera and on the genito-urinary tract,—ought not to be offered at all to the general practitioner; but the pathology of surgical conditions of these organs and the relation of their disorders to disturbances of the general economy are important matters of knowledge for every physician.

Finally, thorough training in obstetrics, with especial emphasis on the aseptic management of labor, is a vitally important element of the education of the family doctor on whom must devolve the care of the vast majority of women in pregnancy and labor. Few hospitals at present have maternity departments and for some time to come the facilities for obstetrical teaching will be woefully inadequate for the practitioner. Fortunately the knowledge that, with modern clean methods of midwifery, the hospital is the safest, most economical and best place for confinement is gaining ground in the public mind, and there is reason to hope that before long the clinical opportunities for obstetrical teaching will be much increased.

Enough has been said to indicate what provision should be made by a hospital in order that it may become a satisfactory center for the Continuation Study of Medicine by the practitioner.

If one may judge from the type of courses heretofore offered by the polyclinic or post-



graduate medical schools and sought by their students, the demand from many physicians is for a kind of work not here recommended. It is, however, an essential function of such a study center to direct its students into proper lines,—to offer them courses of instruction which will make them more efficient, trustworthy general practitioners, and to discourage them in every possible way from the ambition to become made-while-you-wait specialists.

One of the best opportunities which the smaller hospitals can offer for training is service as a resident or assistant physician in which the duties will be essentially those of an interne. This plan will serve a double purpose, opportunity for the student practitioner and interne service to the hospital which in many institutions can be obtained in no other way. The demand for internes each year by the hospitals in the United States is now nearly double the total number of students graduated by all the medical colleges of the country. This discrepancy is certain to increase because the number of hospitals is growing rapidly while the number of medical graduates, which should be limited by the real need for physicians, ought not to increase for some years to come. In this emergency the appointment of physicians, seeking further opportunity for intensive study, seems one of the best means of supplying the demand. Their terms of service will be more brief than that of the student just graduated,—usually three to six months. On the other hand they are much better prepared, as a rule, by the experience gained in private practice to perform the duties required in such service.

Frequent meetings and conferences of the medical staff should be held in which the internes and student practitioners participate. They should occur at least as often as once a week, taking up for discussion cases of special interest, demonstrating pathologic specimens from autopsy or operation, with occasional papers from the students in which the literature of some disease which has been observed in the hospital by the student, has been worked up and analyzed.

Should tuition fees be charged for such continuation courses? This it seems to me, is a

question which must be decided by each hospital which organizes itself for such work, and the decision will vary with local conditions. A practitioner for example serving as a resident or interne gives ample return for his opportunities. In a health center hospital, erected and maintained by the community, as are those in Iowa, the opportunities for postgraduate study belong by right to the physicians in that region.

No diploma or gaudily engrossed certificate should be given to a physician student who has completed a term of study, but a simple straightforward statement of just what he has accomplished, setting forth the dates of beginning and ending of his term of study, may be given him, signed by the proper officers of the medical staff.

It would be of advantage in my judgment, if outlying hospitals organized into such study centers, could be affiliated or associated in some way with a University Medical School, not too far away, and the latter institution should offer courses, or at least provide for occasional conference, on medical pedagogies and administration, attended by the staff members of the outlying hospitals.

What hospitals in the United States are fit to undertake work of the sort we have been discussing? This question involves so wide and intimate a knowledge of the character, equipment, and above all, of the personnel of the staffs of our many hospitals, that no individual or organization is at present prepared to give a complete and satisfactory reply.

The surveys which have been made by the Council on Medical Education of the American Medical Association, by the American College of Surgeons, by some of the State Boards of Medical Examiners, conspicuously that of Pennsylvania, and by a number of the Medical Schools which now require the completion of an interne year in an "approved" hospital as a prerequisite for graduation, have all been helpful and they have accumulated a large amount of information.

Each of these surveys, however, has been conducted for some special purpose, and not one of them has been adequate and comprehensive even for the hospitals visited.

There is an acute need for a single, unified, comprehensive survey of the hospitals of the

United States conducted by groups of investigators in each of which groups all of the important interests involved in a modern hospital are represented by persons each of whom is competent to judge of the efficiency of the hospital in his particular field. Such a survey and listing of hospitals is needed by (1) the medical school requiring the interne year, (2) the State Boards which require the completion of an interne year as a prerequisite for licensure, (3) by the nurses, organizations and examining boards in states where registered nurses are licensed, (4) by hospital associations and many other interests which desire to know of the efficiency of the management and economic conduct of the hospitals, (5) by the organizations of hospital social workers, a feature of hospital activity becoming more and more important, (6) last but not least, by the many industrial and manufacturing concerns, especially in States where Workmen's Compensation or Employer's Liability statutes are in force, who have daily occasion to send their injured employees to hospitals.

Such a nation wide survey can be accomplished only by dividing the country into zones, each having such a number of hospitals as can be adequately surveyed in a reasonable period of time by a group or commission.

Each group should include a person (1) familiar with hospital management such as a hospital superintendent of experience, (2) one familiar with nursing and nursing education, (3) a physician or medical educator competent to judge of interne service and the education of the interne, (4) if possible, a social service worker and (5) possibly another physician who will devote himself especially to an inquiry into the character and competence of the medical staff.

Such a survey will be an undertaking of magnitude, difficult, and expensive, but an accurate, thorough and comprehensive knowledge of the many hospitals in this country is such an imperative and immediate need to many interests, that it should be undertaken.

The one organization that is best fitted to undertake such a survey and listing of hospitals is the American Conference on Hospital Service, which is made up of delegates from the National Associations representing the several phases of hospital work. It is hoped that such

a survey can be undertaken in the near future.

Meanwhile any hospital of 100 or more beds, (there are at least 400 general hospitals of this size, in the United States not now engaged in teaching) well organized and equipped, with an earnest, competent medical staff, ought to offer its advantages as a teaching and study center to the physicians in its vicinity. Its organization as such a center will not only greatly enlarge its field of usefulness but is more certain than any other step to improve the service which it renders to the patients who resort to it, and to make the members of its medical staff more studious, alert, scientific and capable physicians.

### RADIUM; ITS THERAPEUTIC USES IN SURGERY\*

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Radium is still rarely discussed before general medical meetings. One is therefore tempted to make a few general remarks concerning the strange and previously unheard of qualities of this substance which has revolutionized our conception of matter, revolutionized geological theories and astronomical views, and by its action upon living tissues has become of great importance to the botanist, the biologist and the physician.

If you remember that radium gives off energy day and night for months and years and centuries, until at the end of seventeen centuries this energy is decreased to half and after another seventeen centuries to one quarter of the original constant flow of energy, if you further consider that this energy is equal to heating its own weight of water from the freezing point to boiling every three quarters of an hour day and night year in year out for all these centuries, we stand indeed before bewildering phenomena. And if a physicist calculates that the energy embodied in an ounce of radium and gradually given off during the course of disintegration into another element, probably lead, is enough to lift one hundred of the largest battleships afloat entirely out of the water, we

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recognize that we are dealing with a power all of its own.

A few general remarks seem desirable, though I am in danger of dwelling too long upon the physical qualities of radium. This substance emits its gamma rays of a power of penetration that the hardest roentgen rays, so far produced, can not nearly equal. If we wanted to equal the penetrating power of the gamma rays of radium with the roentgen tube, the spark gap, instead of ten inches as now used for deep x-ray therapy, would have to be from eight to fifteen feet. For deep x-ray therapy the softer rays are of no use and only detrimental. The hard x-rays will be half absorbed after going through 5 cm. of soft tissue, while the gamma rays penetrate 26.5 cm. before being reduced to half strength. Ten cm. (equal to four inches) below the surface of the body the hard x-rays coming from 8 inch skin distance are reduced according to C. H. Viol, to one ninth of the surface intensity for the same square surface. To get the effect of an erythema dose at this depth i. e. the dose which the skin can stand with impunity at one session, we would have to torture the skin with nine times the maximum allowable dose. All this is mentioned only to illustrate the superiority of the radium gamma ray over the best available roentgen ray. If at 26.5 cm. we still get half intensity of our rays, it becomes at once clear that we may have very effective cross firing through chest and abdomen from all sides. The different tissues withstand the radium application in different degrees. If we put an average skin resistance at 100, the scalp can stand 125, the bladder 25, the rectum 20, the urethra 10, while the uterine wall could be put at 300.

The uterus is thus a favorable area for the treatment of its tumors, and here indeed did we see the first striking results. I have observed cessation of profuse menorrhagia in uterine fibroid and an almost complete disappearance of the fibroid itself which was the size of a three months' pregnancy, after one 24 hours application of 50 milligrammes of radium element. And the radium was only applied vaginally. I have not used the radium in fibroids larger than a uterus 4 month pregnant. The generally accepted technic is the intra-uterine application of radium in these cases. I

have persisted in the simple vaginal introduction combined with external application over the lower abdomen. Unless there are complications like inflammatory changes of the adnexa or similar special reasons, we prefer radium to operations in the moderate sized fibroids.

In simple uterine bleeding, meno- or metrorrhagic a diagnostic curettage should be made in all cases. Intra-uterine application of radium can be combined at once, or the radium may be introduced vaginally. In intra-uterine application nausea may be severe, a watery discharge may follow the treatment at times for even months, and if even very slight and quite old inflammatory residues exist in the adnexa, intra-uterine radium treatment is a mistake which revenges itself most unpleasantly. It is necessary to tell the patients beforehand of the possible sequelae, especially of nervous symptoms in case a suppression of the menses is strived at, otherwise a sense of disappointment multiplies the regular menopause molimina, and the product is charged to your medication.

The most glorious results of radium therapy are seen in inoperable carcinoma of the uterus. Even badly advanced cervix carcinomas with involvement of the vagina forming foul ulcerated craters quite commonly improve so much that those practitioners and surgeons who have not seen this improvement before, are often not only elated but perplexed. Right here a word of warning is apropos. First of all the observations are not yet of many years' standing, though Heyman of Stockholm had in 66 cases 28.8 per cent cures after 5 years. If a return of the growth occurs, and some very experienced men do not dare hope for a permanent cure in these cases, there comes a time when radium has no further staying effect; the growth then runs wild. The primary results vary greatly. Some patients stand the treatment with the greatest impunity, others not, especially when the rectum is involved. A moderate encroachment of the bladder is already less disastrous in our experience, as these forms of carcinomata remain local growths for a longer time. Carcinoma of the body of the uterus has such good surgical prognosis that its treatment is operative. One case where operation was ruled out, is well so far, but only of recent date. Particularly

favorable cases for radium treatment are post-operative recurrences in the vagina. They may remain well. Even in other parts of the body these local implantations often seem to yield readily to radium, as after breast operations. One case of carcinoma of the alveolar process in which I made a resection of the upper jaw, had a recurrence in the wound of the incision of the cheek. It is now five and a half years since the operation and the patient, whom I met a short time ago, smoking a big cigar, is in splendid health.

Speaking of carcinoma of the upper jaw I have two cases which have been operated upon elsewhere, and came to me as inoperable, three and three and a half years ago respectively. as we have done for more than ten years, we first resected atypically extensively and then applied the hot soldering iron to the limit of permissibility. This was also done in the two cases called inoperable, and 5000 milligramme-hours of radium were given starting a week or so after the operation and giving the whole dose within a week if possible. Both cases are still well and very happy.

*Carcinoma of the tongue, palate, pharynx and mouth.* While writing this paper I have two patients in the hospital, who were both operated upon for carcinoma of the tongue. One had his operation a year ago. It was a carcinoma of the base of the tongue which we removed by a lateral submandibular incision. The tumor reached very close to the epiglottis. We removed the base of the tongue, going well beyond the midline and backward to the epiglottis removing even part of the mucosa covering the anterior surface of the epiglottis itself. Radium was placed into the bottom of the remainder of the tongue,—50 mgr. were left in place for 48 hours. This was a large dose, half of the amount used in full treatment of carcinoma of the uterus. We watched closely and with apprehension for possible sudden edema of the larynx, though the radium was placed as far from the epiglottis as feasible. No signs of choking occurred, but later on the wound gradually opened somewhat and now at the end of a year we put a pedunculated flap over the opening which was the size of an unpeeled almond, in the midst of which you could readily

see the epiglottis and the scarry neighborhood of the base of the tongue.

The other mentioned case of carcinoma of the tongue, where we removed over half of the base together with the tonsil and its two pillars and the adjoining portion of the pharynx after splitting the lower jaw in the midline, had too extensive an operation to make it advisable to add possible shock of radium immediately. An operation for strangulated femoral hernia—due to the coughing—three days after the tongue operation made us wait two weeks with the insertion of the radium. This case ought to be a rather favorable one, as the forms of tongue carcinoma, where we do not have large fungating ulcerating surfaces but rather moderately ulcerated hard nodes, are much more favorable, especially if the microscopic picture does not prove it to be of squamous cell type with horny pearls. In these latter forms the radium is rather powerless. Carcinoma of the tongue and the floor of the mouth is one of the saddest chapters in surgery, and if radium should prove to be of benefit as it seems to be, it is a real blessing.

Endotheliomata and mixed tumors of the parotid gland are favorably influenced. Two of my cases are under complete control for 4 and 5 years, one of them after operative recurrence.

*Carcinomas of the pharynx and naso-pharynx* are as a rule favorably influenced. One case came to us in June 1919 with great dyspnea. A tumor of the size of a tangerine filled the back part of the mouth and pharynx. The patient was snorting with the mouth wide open. The first thing to do was a tracheotomy. Then plugging the entrance to the larynx we bluntly removed quickly the large mass from the posterior wall of the pharynx, inserted 50 mgr. of radium and packed tightly. The tumor had also filled the entire naso-pharynx. This patient surprised us with a complete freedom from recurrence after more than two years, when he came to town with his sick wife.

*Carcinoma of the thyroid.* Three cases of what seemed to be clinically and microscopically a struma proliferans of Langhans (a form of adenocarcinoma of a moderate malignancy) were extensively excised and strongly treated with radium. They are well, though operated



upon 6 and 7 years ago. I do however not feel quite certain as to the diagnosis. One case of an enormous carcinoma of the thyroid, over-reaching the sternum downward for 7 cm., could be only partly excised. This was done in January 1918. Radium was used in maximal doses. In the first four months after the operation the 72 year old lady, gained from 118 lbs. to 176 lbs. Two years after the operation the neck was quite small and, though there was a hard induration around the trachea, the general condition was very acceptable. Six months later the patient died from what appeared to be pulmonary metastases.

In another patient, a male, 45 years old, we made the diagnosis of struma maligna and excised the thyroid extensively, though not totally, in Nov. 1913. The tumor was somewhat larger than a man's fist and was situated in the left lobe. All was well then for two years, when he began to notice a renewed swelling. He did however not come back until March 1918, when I again found on the left side a fist sized tumor and a plum sized one low down on the right side. The left tumor was not movable upward and downward, and only very little sideways. We operated again, and had to resect the internal jugular vein for its whole length and two inches of the vagus nerve together with the tumor. About ten days after the operation we applied 3700 milligramme-hours of radium and six months later another 2500. During the year 1919 he had again twice radium, which held the growth in check, though it had made its appearance again. The last time he came for radium treatments was in August 1920. He was then in rather poor general condition.

I report some of these operations together with the radium treatment to emphasize the necessity of using the several procedures conjointly. To get the best results it is necessary that the surgeon know the possibilities of radium and that the radium therapist be in close touch with the surgeon.

In carcinoma of the esophagus the application must be made through the esophagoscope. Only temporary results can be expected here. Nevertheless we had at least one rather satisfactory temporary result. It was a man of about 45 years, who came to me January 1905 in

a most pitiable condition. For one week previously, only thin broth could be swallowed and for the last two days not even water. Even the finest esophageal sounds could not be passed beyond a point about 6 cm. above the cardiac end of the stomach. With the esophagoscope we found a strictured hard area at the place mentioned with raw hard edges, an ulcerated stricturing carcinoma of the lower end of the esophagus.

Fine silver-wire sounds could now be passed into the stomach with slight pressure. The stricture was about 6 cm. long. Unless one saw the narrow crater the probes would invariably be caught at the side of it. Dilatation then followed with gradually increasing sizes of the sounds, partly of olive shape. The effect upon the patient was marvelous. Even with what seemed to us a small opening he began to eat soft food to his heart's content and soon smilingly reported that he stole a piece of meat from his neighboring patient at the hospital, after which he was allowed to try all kinds of food.

Within three weeks he gained twenty-six pounds. In order to do as much as possible beyond a simple palliative measure, and to give the patient all possible chances and at least some reasonable hope, we started to use radium. A glass tube containing a few milligrams of radium bromide was sewed into a piece of linen, and the whole was fastened to a silk thread. It was attached to the end of a sound and inserted into the crater without any screening. It was allowed to remain there up to thirty minutes at a time, in all about six times. After a few months (in May, 1905) the patient was better in appearance, weight, strength, mental condition. Not even then, however, could I insert a tube or probe without the use of the esophagoscope. I imagine it did not find the hard rigid area, but got caught against a portion outside of this hard ring. This patient then felt so well for a long time that he thought he was cured, and notwithstanding my urging him to come at intervals to see me he did not show up any more. His difficulty re-appeared later, and he died about a year after his first visit to me. While the decided temporary result was apparently due to the mechanical dilatation, I cite this case



as it occurred one year before Bircher published his claim of being the first to use radium in esophagus cancer by esophagoscopy.

The maglinant tumors of the *mediastinum* are a most important field for the use of radium. They are mostly sarcomata and lymphosarcomata. For the present our only hope in nearly all of these cases lies in the roentgen rays and more especially in radium. Very large doses of radium with sufficient filtering to remove all but the hardest gamma rays seem necessary, according to Burnham of John Hopkins University who reports most remarkable results. He used only those radium rays which were left after filtering with 3 mm. of lead. If the radium can be introduced into the tumor mass, smaller quantities may be sufficient.

Permit me to report a case in this connection: On Feb. 21, 1917, a gentleman of 26 years consulted me for a mediastinal angiosarcoma. The clinical picture was typical. Our patient was cyanosed. His face was puffed up, the eyes glossy, the veins of the neck distended. Pain in the chest was complained of. A moderate but annoying dry cough existed; pulse 125, temperature 99 8/10°. For many weeks the patient had not been able to sleep in bed or to lie down on account of his dyspnea. Over the upper part of the sternal region there was a bulging, which was soft to the touch like an angioma. The diameter was about 10 cm. At the periphery you could see tortuous veins. On March 6th after some x-ray treatment we gave a few whiffs of ether in sitting posture, tied the peripheral blood vessels off by interrupted circumferential sutures, made a vertical incision down to the sternum, inserted the radium (50 mg.) into the wound, and immediately packed and compressed. The tendency to bleed was fearful, but compression and some clamps stopped it. The radium was left in only 7 hours. Four days later without anesthetic we made a groove into the manubrium sterni with Luer's rongeur shears. The bleeding forced us not to go farther. The radium was put into this sternal groove and left in for 23 hours. After this the patient felt easier, did not cough as much as before and began to sleep at night. On March 17th we went through the sternum and inserted the radium

into the retro-sternal tumor mass. The tendency to bleed was incomparably less than previously, especially than at the first incision. This time, and one week later, and again after another two weeks the radium was placed into the wound, each time for about 48 hours. In all the patient had 8600 milligram-hours. If we consider that this dose was given in the tumor, it is a very respectable dose and more than is usually given for instance in a carcinoma of the uterus. In addition we gave during that time (including two pre-operative treatments) five x-ray exposures (10 to 15 minutes, hard tube, with 3 mm. aluminum filter). Pain in the left shoulder was complained of for a while, but the general condition was greatly improved. The patient could sleep in his bed, up to eight hours in the night. He went to the theatre, traveled to his home and came back during the eight weeks he was under our care, and was most enthusiastic. Three months later, I was informed, that he succumbed to what was declared a pneumonia.

Carcinoma of the *breast*. We are of the impression that x-ray and radium have very materially improved the prognosis of our cases. We give pre-operative x-ray treatment for two days in order to stun the cells enough to make implantation less likely. Fat young women with soft fast growing carcinoma give a very bad prognosis, radium or no radium. The atrophic forms, which so often come late upon the operating table, and for this reason have greatly hurt or almost spoiled their operative chances, are definitely benefited by radium and x-ray. The treatment is not to necrose all carcinoma, but to increase the fibrotic strangling of the carcinoma nests. Even when the skin is perforated, healing may occur by patient use of moderate doses.

Carcinoma of the *bladder, prostate and rectum* may be greatly benefited by radium. The female bladder is more accessible of course. But by suprapubic incision we can use the hot iron and then put the radium into place. In malignant papilloma this has worked quite well in our hands. In carcinoma of the prostate we have laid bare this organ as for a perineal prostatectomy and then either applied or inserted the radium under bulky walling off of the rectum. The rectum, especially the lower

portion, does not stand radium well, and the patient complains bitterly of pain and tenesmus. Our procedure seemed therefore an improvement over the method of treatment, as advocated in the literature; but our experience in this field is quite limited.

Carcinoma of the rectum is more of a surgical possibility than that of bladder and prostate. The inoperable forms and the post-operative recurrences are relegated to the radium treatment. The circular carcinomata of the upper rectum are the most favorable for radium or any treatment, because they remain comparatively long rather localized. Carcinoma of the lower portion of the ampulla involving the sphincter area is the most dreaded by the surgeon. And just here I have a result which is worth mentioning. In November 1919 a lady 65 years old, was brought to the office in a pitiable condition of pain, weakness and corrosion around the anus. A carcinoma in the lowest part of the ampulla recti involving the anal ring, had a diameter of about 6 cm. It was situated on the left and posterior wall, was ulcerated and the neighborhood was somewhat infiltrated. The lower border was protruding from the anus. The local and the general condition did not seem to warrant surgical measures. Radium was given in a—for this region—almost ruthless dose. She received at once 2400 milligram hours November 10, 1919. In February 1920 we gave another 2200 milligram hours. The patient improved splendidly. In November 1919, when first seen she only weighed 75 pounds. In February 1921 her weight was 115 pounds, a gain of about 40 pounds. Her only trouble now is a prolapsus of the rectum. The sphincter does not act; we had produced an extensive sloughing by the radium; but apart from a slight thickening in one place, all was healed and the patient is very happy over the result.

This is an unusual case, as in other instances (especially when the growth was fixed solidly to the sacrum) the patients pay almost too dearly with pain for the small benefit which is principally psychic.

The Frenchman says, that the art to becoming a bore is to be complete. So I will not longer abuse your patience. You all have read much about the favorable influence of radium in

numerous more harmless skin affections like acne, warts, keloids. The latter especially when recent melt away beautifully, and if the cosmetic result then is not quite satisfactory, the base of the keloid can be resected after the radium effect upon the keloid and it will not recur as it otherwise usually does.

The rapidly multiplying cells, as for instance the normal cells of skin and testicle, are far more influenced by the rays than the long living ones as exemplified by the cells of the central nervous system. The fast multiplying cells seem stunned and sterilized by the rays. Thus even if the microscope still shows tumor cells as present they may be inert, impotent of making trouble for different lengths of time.

The basal cell carcinomata or rodent ulcers of the face seem to give striking and permanent results, so that if you feel sure of your diagnosis surgery may be dispensed with. Cures lasting 6 and 8 years are on record. Personally I feel safer with surgical measures, eventually followed by radium.

With other malignant conditions we must be guarded in reporting cures. But if radium should give only temporary results in these disastrous cases it has its welcome place in the medical armamentarium. Its usefulness often increases in combination with the hot iron and the knife. While the knife and the hot iron, the two classical weapons of the surgeon in his battle against malignant growths, destroy equally normal and pathological tissue, the hot iron probably having the additional beneficent effect over the knife in not leaving an exposed fresh wound for implantation and in producing a cicatricial change beyond the line of destruction, which cicatricial change imprisons and starves possible remnants of cancer cells in the directly adjoining tissue, the radium has more of a selective action which we know already from the roentgen treatment.



## THE MEDICAL EXPERT WITNESS\*

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In approaching the preparation of this paper I confess to much hesitancy and misgiving. I am not unmindful of the fact that in dealing with the subject in hand, namely, medical expert witnesses, I am obliged to trench upon matters which of necessity are more familiar to my audience than to myself.

I am also mindful of the fact that while it may be an easy matter for one of my profession to argue a case in court or even to harrangue a public gathering from the stump it is a vastly different thing to prepare and present a message which may prove either instructive or interesting to members of a profession composed of men who have spent years in preparation for their calling and who have spent more or less time in the still more valuable school of experience.

The advancement of the sciences and the progress of research in the various fields of knowledge have made expert testimony and especially medical expert testimony of constantly increasing importance in the administration of justice. The range of medical expert testimony as we are called upon to consider it in the courts is wide in its scope and touches nearly all human affairs as they are dealt with in our tribunals. In fact the range of subjects calling for expert testimony and opinion evidence is so wide that only a brief reference can here be made to the more important branches covered by it.

The subjects most often encountered by the courts requiring medical testimony relate to the different forms of mental alienation, to injuries inflicted upon the living organism such as wounds, poison, violence, infanticide and injuries and death caused through negligence. The subject also relates to inquiries such as legitimacy, rape, pregnancy, sterility and impotency and also to controversies arising out of deceptive practices such as feigned diseases as well as a vast number of miscellaneous questions relating to age, identity, presumption

of seniority, survivorship, and many phases of life and accident insurance.

In administering the law in our courts where questions arise out of the foregoing kindred subjects it is of course always necessary to have recourse to the opinions of physicians, surgeons, x-ray experts, chemists and other associated scientists. These opinions, whether written or oral, are made use of by the courts subject to certain rules which have been adopted as best calculated to assist in arriving at correct results and which it is believed will best promote the ends of justice. Such expert testimony is not received because the witness is supposed to have greater sagacity and judgment and power of reasoning. If such were the purpose such men might be called in all cases to advise the court and jury as to how the case should be decided and thus change the entire mode of trial; the true purpose of calling such witnesses is to receive the benefit of their professional skill, knowledge and experience and thus enable the court and jury to draw inferences where men of common experience after all the facts have been proven would still be left in doubt. It is hardly necessary to say that expert evidence on the foregoing and kindred subjects is of inestimable value and is the only way by which vital facts along these lines may be brought before courts and juries for determination.

It is a fact well known to the members of both the medical and legal profession that the lay-public often severely assails the manner of trial and the results obtained in many criminal and civil cases where expert medical testimony furnishes the determining factor in the verdict reached. While this feeling on the part of the public is to be deplored, yet, in view of the superficial knowledge possessed by the average critic in respect to the cases upon which he freely passes judgment, it is not astonishing that the whole system of administering law is thus assailed. Insofar as the attacks are justified, the members of both our professions are vitally interested and both professions should put forth an earnest effort to remedy the defects complained of.

One of the popular cries against the courts and the medical experts who appear as witnesses is that the testimony of such experts is

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highly partisan and even in certain cases the subject of purchase. In an experience of twenty years in the practice of law and ten years on the bench I can say with sincerity that it has been my observation that the average medical expert witness gives his testimony with candor and frankness and with less partiality than is found among other classes of witnesses. It is true that the character of opinion evidence is such as to make the charge of falsity or of bias easily made; but in the main such charges are without foundation.

It is a familiar fact to every Judge and lawyer that in their testimony regarding the simplest facts the most truthful witnesses will often disagree.

Critics of medical expert testimony fail to recognize the fact that all branches of testimony produced before courts are open to many of the same charges made against the medical expert.

It is idle to deny the claim that there are many miscarriages of justice in cases where medical testimony plays an important part but this is more often due to the ignorance or prejudice of juries, pettifogging practices of counsel or the incompetence of the Court itself, than to unfair or dishonest evidence on the part of experts. Much prejudice in the public mind has grown out of such cases as for instance the Thaw trial. It will be recalled the important part played in that case by alienists who arrayed themselves in about equal numbers, either for the state or for the defense; and how it was currently reported that fees of experts aggregated many hundreds of thousands of dollars. In that case the defendant's mental condition was the vital issue and called for and probably received a high degree of learning and skill on the part of experts. Just how far the jury were influenced by such evidence was of course a matter of conjecture. Strange as it may appear there are few cases in which expert testimony is received with so great indifference by the jury as in those where the determination of sanity is involved. The defense of insanity in criminal cases has doubtless often been abused and in the lay mind is frequently looked upon with suspicion. The average jury seems to recognize no species of insanity which is not accompanied by mental

vacuity or frenzy. All other forms fail to appeal to him and he is quite likely to be skeptical as to their actual existence. If the person whose sanity is being investigated is able to answer questions intelligibly it is pretty difficult to convince the ordinary jurymen that he is insane.

It is also a fact that the jury is especially inclined to be suspicious when a medical witness appears in the role of advisor or associate counsel, sitting beside the attorney who calls him, taking copious notes and making many whispered suggestions. In the estimate of the ordinary jurymen this stamps him as a partisan who has come to court prepared to fight for his side of the case and for that side alone. The medical expert witness must of course often instruct counsel on some obscure medical questions involved in the case but he will, if wise, studiously avoid placing himself in the apparent role of a retained assistant counsel.

The view is often held by the public that a certain number of experts swear on the one side and in opposition to a certain number on the other and to an opposite state of facts. This view, as we all know is unfounded and absurd. As a matter of fact experts often disagree but this is largely due to the fact that they are not asked to give opinions based upon the same assumption of facts. Each counsel questions a witness from a different standpoint and selects facts and embodies them in his hypothetical questions most favorable to his own view of the case. Too often the jurymen regards the hypothetical question as a cunning device by the lawyer to muddle him and he is quite apt to include the doctor in the conspiracy. Of course expert opinion is of no value whatever unless the assumptions in the hypothetical question are true and it sometimes happens that counsel are unable, either through lack of knowledge or otherwise, to elicit from the expert the line of opinion evidence required to enlighten the court and jury.

Referring again to the plea of insanity as a defense to criminal charges and the prejudices which exist in the mind of the public with reference to that defense we must understand that we can only meet and overcome such prejudice through a fair and honest presentation of the facts in each case and by steadfastly refus-



ing to aid or abet a defense based upon that ground except when after a thorough examination the facts are found by the expert to warrant such defense. It is doubtful if the lay mind will ever be able to grasp the full truth regarding the plea of insanity but a thoroughly conscientious effort on the part of both professions will go far toward inspiring confidence both in the minds of jurors and the public in general.

Another fruitful source of criticism made against the courts and in many instances indirectly against the medical expert is occasional miscarriage of justice in personal injury cases. Charges are freely made that certain unscrupulous lawyers and doctors acting in co-operation have in many cases succeeded in obtaining unjust and unwarranted verdicts in this class of cases. As a matter of fact there are few such instances in comparison to the great number of legitimate damage suits tried in our courts. But there is just enough truth in these accusations to throw a certain degree of discredit upon both professions.

Not so very long ago it was alleged that a passenger in a street car was violently thrown against a seat, thereby sustaining a concussion of the spine rendering her a physical wreck. She was examined by certain physicians who reported a tumor which her family physician testified was four times as large at the time of the trial as when it first appeared a short time after the accident. There was considerable dispute in the evidence as to whether a tumor could be produced by such an accident. The jury concluded that it could be so caused and returned a verdict for twenty thousand dollars in favor of the plaintiff. On the motion for a new trial heard a few months later it was shown that the plaintiff had given birth to a still born child at full term and that she had not at any time been afflicted with a tumor. Perhaps an honest mistake had been made but the case was not one calculated to inspire the confidence of the lay-public.

We are all familiar with the theory of traumatic cerebro-spinal concussion, railway spine, traumatic neurasthenia, traumatic hysteria and kindred manifestations. A few years ago personal injury cases against railway companies based upon these conditions were frequent. To

some extent such cases still appear in the courts. Some of them are doubtless meritorious and yet every lawyer and every physician knows perfectly well that through cases of this kind railways and others have been defrauded out of hundreds of thousands of dollars.

It is of course recognized by everyone that justice often fails. But it will be well to remember that however far short the courts may fall in administering the law the fault lies not so much in the system itself as in the infirmities of human nature through which it must be administered. It is not strange that with the human frailties and imperfections which must ever be found in those constituting our courts, equal and exact justice will often fail; but this fact furnishes no reasonable ground for condemning the whole system of jurisprudence which is often done by extremists and radicals. The judicial system of this country and the English system which is its parent is the best that human wisdom has yet devised. It of course falls far short of the ideal which contemplates a jury wise and unbiased, counsel ever desirous of enlightening the Court and jury rather than to befog them, and witnesses impartial and at all times truthful.

Along with other criticisms aimed at our judicial system comes at times the denunciation of the medical expert and it often happens that an honest and learned physician giving testimony in support of what he believes to be a just cause is nevertheless berated and ridiculed by opposing counsel and perhaps discredited by the general public. From my own observation I am convinced that the task set for the medical expert in many cases is far from a pleasant one and his difficulties are greatly multiplied because it so often happens that the lawyer who undertakes to examine or cross examine him is unable to adequately or properly do so. The members of both law and medicine should not lose sight of the fact that the subject of medical legal jurisprudence is a theme worthy of their most careful study and consideration. Especially should the lawyer follow out lines of careful study of questions involved or likely to be involved in cases where medical expert testimony is required. This he may not expect to do with any such degree of thoroughness as must the physician but he



should at least do so with a sufficient degree of care and understanding to enable him to intelligently examine and cross examine the medical expert; and also to recognize in his own practice the scope and bearing of medical-legal questions arising in cases with which he may be intrusted.

Would it not conduce to professional advancement if occasionally there were to be an interchange of lectures by members of each profession covering the subjects in which we are jointly interested? Would not such a practice result in a better understanding of the code of professional ethics as applied to both law and medicine? A physician who goes upon the witness stand in an important case without a preliminary knowledge of the rules of evidence and especially as to the practice concerning examination and cross examination of witnesses is often placed in an embarrassing position and sometimes fails to get clearly before the jury the matters of most importance. A little elementary study along these lines would often save him embarrassment and even professional depreciation. In giving his testimony he should limit his evidence to facts called for by the questions put. He may feel that the question is unfair and does not call for evidence which he believes should be produced but he should "possess his soul in patience" and allow the propriety of the question to be settled by the Court. There are of necessity many questions he cannot answer with certainty. In such cases he should be careful to express a qualified opinion only. It is of the utmost importance that he avoid digression from the question asked and that he refrain from speculation and from volunteering testimony. In fairness to himself and all concerned he should, before going on the witness stand, go over the ground to be covered by his testimony with the attorney calling him, not merely as a precaution against surprise during the examination but largely that the attorney may understand just what points the witness is prepared to cover and thus avoid asking questions which would be absurd or at least irrelevant.

Again, there is much in the manner of giving expert evidence. It is important that the witness should impress the Court and jury with his absolute sincerity and earnest purpose to be

fair and of his knowledge of the subject matter. Occasionally a physician will allow himself to be drawn into a fencing match with opposing counsel and while it is true that the doctor usually gets away with the lawyer because he knows more about what he is talking about than the lawyer and is often able to crack a joke at the lawyers' expense still every time he does so, he weakens himself with the jury. They are apt to regard him as a sharp or witty man but as a rule people are not inclined to attach great weight to the evidence given by that sort of witness. My advice is that when the temptation comes to crack a joke on the witness stand never to yield to the temptation. We laugh at jokers when that becomes their predominant characteristic but as a rule we do not choose them either as advisors or as authorities in important concerns of life. Every lawyer who knows his business will tell you that every time a witness on his side of the case gets funny or tries to joke that instead of laughing he feels more like fighting. The would-be humorist on the witness stand sometimes succeeds in getting the court room to giggle and he is always sure to laugh at his own jokes but the jury is likely to regard him as a light hearted individual whose evidence is not worthy of much consideration.

Next to a knowledge of law the most important part of a lawyer's stock in trade is a knowledge of human nature, and when he sees that the testimony of a medical expert is damaging his side of the case he frequently knows that if he can provoke the doctor into saying sharp, sarcastic or savage things or getting him to cracking jokes he has robbed his testimony of its most dangerous qualities by destroying in large part its influence with the jury. On the other hand, if the expert succeeds in keeping his head and if he treats the matter in a candid, serious and straight forward manner, even though the jury may think him a trifle slow, his evidence will carry weight, for the jury is likely to regard him as sincere and honest.

I venture another suggestion to the expert, that is, particularly to the young expert. The more experienced of course do not need it. It is this: Always bear in mind that you are talking to laymen. Therefore couch your testimony in the plainest and simplest language.

Talk as if you were teaching a class. Let the size of your words be measured by the capacity of your audience to grasp their meaning. If there is anything to be abhorred in a lawyer's argument or in a physician's testimony it is a lot of Latin words. What do we talk for? Merely for the purpose of conveying our ideas to the jury. Therefore speak simply—in language through which the jury may understand the facts which your evidence is offered for the purpose of proving. There is hardly a part of the human anatomy which cannot be referred to before Court or jury by its English name. If this be true why not drop most of the Latin and use the English when upon the witness stand? Isn't it just as easy to say knee, elbow, foot or hand as to use the Latin name? To most of us it would be much easier.

The feeling sometimes becomes fixed in the mind of the jury, Court and counsel during the trial of a case that the expert is simply a hired advocate of one side or the other. The true position of the expert should be a judicial one. He should consider the matter in dispute entirely free from prejudice and give a fair and unbiased opinion. When the jury believes he is so doing his evidence will carry great weight. Let a witness go upon the stand, and, if called by plaintiff, at once begin to magnify the injuries of plaintiff: or, if called by the defendant, swear as hard as possible that there is nothing permanent about the injury, and in fact go to the very limit of partisanship, the evidence is very likely to have little weight.

The situation is even more open to criticism by the lay-public when both sides of the case offer expert testimony which must from the very nature of it be untrue either on the one side or the other. The public is likely to get the idea that it is merely a question of which side first gets the expert who is most clever in perverting the truth. This situation is illustrated by the case where a noted attorney had just finished an able argument to the jury. The case being tried on the defendant's side by a local attorney who made no pretensions to oratory. When he arose to answer counsel he said:

"Gentlemen, you have just listened to an able and eloquent speech by counsel for the other side. But let me tell you, we would have had that speech on our side if our telegram had

reached him a few minutes before the plaintiff's did."

That is the way critics regard the matter in some instances. They get the idea that testimony is for sale to the first comer; that the expert has no conscientious scruples in the matter and is governed by a monetary consideration.

It may be that some of you are very naturally asking me how it is that I who belong to a profession which is ready to be retained by either side without always going to the merits of the controversy, can censure members of another profession for holding themselves open to serve whoever may first employ them as expert witnesses. The difference is this: Lawyers, when retained to represent their clients in court, do not assume to act judicially. That is, the lawyer does not assume to say that he has examined both sides of the case and that he testifies under oath impartially; that the side which he represents is the right side. He understands and everyone should understand his position. He is there to advocate one side and to make it look the best he can. He does not pretend to give his opinions based upon the entire transaction. But he attempts in the best way he can to fight for his side. It is thoroughly understood that he is not attempting a confidence game by claiming to be impartial and then not being impartial. Let it be plainly understood, however, that it is equally to be condemned for the lawyer who has a case without merit to be an active agency in subordination of perjury by the employment of experts to bolster up a weak case. Who shall say that the hired perjurer is worse than the man who employs the other to do the lying for him?

A number of attempts have been made in various states to regulate the matter of expert evidence by statute. One plan is to appoint experts by the Courts. In my judgment the plan is not practical. The reform must come through a higher standard of professional conduct in both professions rather than through legislation. We lawyers as a rule do not place much more faith in the enactment of statutes to make men moral and good than the members of your profession put in patent medicine cures to make all men well. Much can be done to remedy the defects in our system of medical

jurisprudence by your own medical societies and by our bar associations. Our professions are amply able to correct the evils complained of and to rid themselves of the unscrupulous. The legal profession should make it a solemn duty to guard against the admission of candidates unfit or unqualified, because deficient in either moral character or education; and both of our professions should actively co-operate in an effort to make it impossible to secure the testimony of medical experts for any other purpose than as impartial judicial exponents of the truth.

Let me say that my experience as a lawyer and a Judge shows me beyond a doubt that there is little upon which to found just criticism of the medical expert. There are of course dishonorable practitioners in your profession and in mine. The percentage is small but both professions suffer by the acts of these unworthy exceptions. It is with our professions as with the individual. The good things which he does in life, though extending through decades, do not fix his reputation as much as do the bad things though extending through minutes. Forty years of right living are often forgotten by the public when it learns of one moment of wrong-doing. So it is with our professions. They are too often made to suffer for the sins of the few unscrupulous individuals. It is therefore of vital importance for all to be ever alert, vigilant and active in exposing, expelling and if need be in prosecuting the dishonest and unethical practitioner whether he be lawyer or doctor. We are all vitally interested in the suppression of both the shyster lawyer as well as the quack and mal-practitioner. The members of these two great professions need no reminder that we shall always find our highest honor in a deserved reputation for fidelity not only to clients and patients but to public duty as honest men and patriotic loyal citizens.

In closing let me assure you that I regard it a privilege to address the members of a profession for whose membership I have the highest respect. We, who call upon you in our most anxious hours need no reminder that your profession has done and is doing a mighty work in relieving the sufferings of mankind. We well know that wherever duty calls there you are found. Wherever there is pain and suffer-

ing, whether it be in the darkest night or the fiercest storm, whether in the home of poverty or the dwelling of the mighty, whether in the midst of plague or upon the field of battle the true physician never falters. He is a repository of the most sacred family secrets and he never betrays them. To belong to such a profession is indeed to be chosen for the highest plain of usefulness.

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### SURGERY OF THE PROSTATE\*

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Lesions of the prostate show few variations in type. Probably not more than one-half are surgical. As shown by Judd and Crenshaw in a review of all patients seen in the Mayo Clinic for a period of eight and one-half years in whom symptoms were produced by prostatic lesions, only 42 per cent were surgical; these were subjected to operation.

Prostatitis is of two distinct types. The acute form, practically always due to gonorrheal infection, occurs most often in young men, and because it usually responds to nonsurgical treatment is very seldom treated surgically. Chronic prostatitis may be the result of gonorrheal infection in youth, but may give rise to few symptoms until later in life. In a recent review of 856 cases in which prostatectomy was performed the gland was of the chronic fibrous type in fifty, without adenomatous hypertrophy; in forty-eight, prostatitis was the primary condition, and the glands contained a few small adenomas, while in fifty-six marked prostatitis was associated with primary adenomatous hypertrophy. Chronic prostatitis, with little enlargement of the gland, is capable of producing all the symptoms of adenomatous hypertrophy; that is, frequency, difficulty, and incomplete emptying of the bladder, with the residual urine at times amounting to the entire capacity of the bladder, and in some cases, acute retention. The marked fibrosis in this type of prostatitis and the absence of cleavage planes correspond to those changes occurring in

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other parts of the body following infection, which would indicate that infection must play an important part in the etiology of urinary disturbances in the presence of this type of gland.

Prostatic abscesses, single or multiple, quite often occur secondary to the acute infections of the prostate during the course of venereal disease. Few, however, become surgical, for they usually point and drain through the urethra. As a surgical condition, therefore, prostatic abscesses are of relatively slight importance.

Carcinoma of the prostate is found in 15 per cent of the patients with symptoms of prostatic obstruction. Unfortunately, the onset of these symptoms is gradually insidious and, as is seen in malignancy elsewhere in the body, the symptoms are usually manifest only after the disease has advanced locally to the paraprostatic tissues and the bladder, and remotely by metastasis. Surgery has seldom been productive of permanent good results in these cases. Bumpus, in an analysis of 362 cases of carcinoma of the prostate observed in the Mayo Clinic, found that remote metastasis had occurred in 21.8 per cent. This finding led to a more careful examination and search for metastasis in a later series, and metastasis to the bones was revealed in 30.3 per cent of 135 patients who were subjected to roentgen examination. The bones most frequently involved were those of the pelvis, and spine, and the femur. Metastasis to the lungs occurred rarely and late in the disease; it was found in the regional glands in 10.2 per cent of 362 cases.

Metastasis found at the first examination immediately removes from the surgical field approximately 40 per cent of all cancers of the prostate. The local advancement of the disease with its early involvement of the bladder and of surrounding structures, and the discouraging results following the radical operation have also excluded practically all the cases without metastasis from surgical treatment, except a small percentage in which palliative suprapubic drainage is necessary. Bumpus states that of 146 patients with carcinoma who were subjected to prostatectomy 80 per cent died within two years after operation, and that of sixty-six patients who lived more than

three years only seven are alive, after seven years.

Benign adenomatous hypertrophy is by far the most frequent surgical lesion of the prostate. It occurs most often late in life. Only 5 per cent of a series of 856 patients were under 50. Twenty-eight per cent were between the ages of 60 and 65, and 83 per cent were in the sixth and seventh decades.

It has been pointed out that the size of the gland bears no relation to the amount of disturbance it may produce. In 9.7 per cent enlargement of the gland was graded 1 (on a scale of 1 to 4), in 48.45 per cent it was graded 2, in 33.95 per cent it was graded 3, and in 7.8 per cent it was graded 4. A slightly enlarged gland may produce marked obstruction with the residual urine amounting to the full capacity of the bladder, while a huge intra-urethral and intravesical gland may not produce mechanical interference with complete emptying of the bladder at urination, or any of the other manifestations of prostatic disease, and may be spoken of as the "silent" prostate.

The indication for or against operation in benign hypertrophy of the prostate are based on the amount of disturbance the gland is producing and the general condition of the patient. A large prostate, found in the routine examination, if unproductive of frequency, difficulty, pain, hematuria, or incomplete emptying of the bladder with resultant residual urine, is of itself usually not surgical. However, when any or all of these symptoms are present as the result of adenomatous hypertrophy of the gland, irrespective of its size, the condition is surgical in the absence of general contra-indications.

The effect of enlargement of the gland on the urinary tract and on the general condition of the patient forbids immediate operation in a large percentage of these cases. When symptoms of prostatic obstruction appear there is nearly always incomplete emptying of the bladder with resultant persisting and increasing amounts of residual urine, but in 9.6 per cent of the cases in our series in which prostatectomy was performed there was no residual urine; in 37 per cent it was but two ounces or less, and in 16.6 per cent the amount equaled that of the capacity of the distended bladder, the patient voiding simply the over-



flow. With the advent of the residual urine and its back pressure on the kidneys, and the occurrence of secondary infection, pyelonephritis supervenes with diminished renal function of variable degree, depending on the amount of residual urine and the length of time it has been present. The finding of residual urine so constantly in prostatic obstruction, and the associated pyelonephritis makes it necessary that these patients be considered potentially, if not actually uremic. Recognition and treatment of the actual or potential uremia preliminary to operation is a most important feature to the successful management of cases of benign hypertrophy of the prostate. In many instances if large amounts of residual urine have been present for a long time, renal function is markedly diminished, as is shown by absence of return of the dye in two hours by the phenolsulphonephthalein test, and by retention of urea to 100 mg. or more for each 100 c. c. of blood. There is often a severe cystitis, and 10 per cent of our patients have had associated single or multiple bladder stones. Removal of the residual urine and prolonged constant drainage and irrigation of the bladder by means of improving the renal function and general condition of the patient. This improvement governs the length of time that preliminary drainage should be maintained. It is our practice to institute drainage of the bladder in all cases when the residual urine is more than two ounces. This may be accomplished by suprapubic drainage or by a permanent indwelling catheter. The latter is preferable in most cases. Suprapubic drainage is reserved for patients who do not tolerate the urethral catheter nor improve by its use, for those in whom all urine is residual, with marked renal insufficiency and symptoms of uremia, for those with severe cystitis, and for those in whom there are single or multiple bladder stones. Patients who have had less than two ounces of residual urine and little or no renal insufficiency have been subjected to prostatectomy without preliminary treatment. This comprises approximately 25 per cent of the cases. About 50 per cent have been prepared for prostatectomy by permanent urethral catheter. The percentage in the latter group has recently been increas-

ed by confining to bed those patients who are otherwise intolerant of the urethral catheter, and by the utilization of the method of gradual decompression of the bladder, as described by Van Zwalenburg, in patients with chronic retention and great distention of the bladder, who were formerly subjected to suprapubic drainage preliminary to prostatectomy.

There has been much discussion and difference of opinion on the effect of sudden emptying of a distended bladder. Some observers contend that sudden withdrawal of all the urine from a distended bladder is a dangerous procedure and precipitates uremia, while others have seen no ill effects. The operation of suprapubic drainage and the immediate withdrawal of all urine in the presence of chronic retention to the entire bladder capacity and marked renal insufficiency is not without danger, but is accompanied by a variable mortality rate. It would seem, from our observation of patients who have heretofore been subjected to suprapubic drainage, and of patients with similar cases in which decompression has been done in recent months by Van Zwalenburg's method without mortality, that the sudden withdrawal of all the urine is a factor in precipitating uremia. The gradual decompression method has the distinct advantage of accomplishing all that suprapubic drainage accomplishes in most of the cases, and of increasing the percentage of cases in which the one-stage prostatectomy may be performed with safety.

The anatomic location of the prostate gland offers two methods of approach for surgical removal, the perineal and the suprapubic transvesical routes. Each method has its advocates and some surgeons employ the combined perineal and suprapubic approach. The perineal method possesses the disadvantages of possible operative injury to structures, resulting in the frequent postoperative complications of incontinence through injury to the external vesical sphincter, and of recto-urethral fistula through accidental opening of the rectum during the operation. The adoption of the suprapubic route by surgeons who have had experience with the perineal operation seems to indicate that these complications outweigh the advantages of the operation. The suprapubic route approaches immediately the part of the gland,



that is, the median and lateral lobes, in which adenomatous hypertrophy occurs, and affords an opportunity thoroughly to explore the bladder, and to treat frequently associated lesions such as calculi and diverticula, and, rarely, carcinoma of the bladder.

Some surgeons employ the two-stage suprapubic operation in all cases, and others employ the one-stage operation entirely. An intermediate course is taken at the Mayo Clinic; the one-stage operation is preferred after preliminary preparation by urethral drainage of the bladder. The percentage of cases in which the one-stage operation may be performed with safety has been increased by the use of Van Zwahlenburg's method of decompression. In the past, the foremost argument in favor of the two-stage suprapubic operation has been the elimination of infection. However, the foul, sloughing wounds and infections in the pre-vesical space following the one-stage operation have practically disappeared and are now rarely seen. This absence of infection may be accounted for by the fact that formerly prostatectomy was performed with little or no preparation of the urinary tract by urethral drainage and irrigation of the bladder, and the operation was conducted in the presence of serious infection. The recognition in recent years, preoperatively or at operation, of diverticula of the bladder has eliminated a postoperative source of infection. The improved technical accuracy of the one-stage operation has been productive of better wounds, less infection, and a shorter convalescence. The two-stage operation necessitates the blind enucleation of the gland and, through the lack of facility to perform the operation accurately under the eye, to control bleeding, and so forth, directly opposes the general principles of surgery, with little or nothing to be gained by the patients through its use. The operation has been acclaimed ideal for the patient who is a poor risk, in that it is a divided procedure, is less time-consuming, and requires a short anesthetic. These reasons do not seem to apply at the present time. The progress made in surgery has improved the technical details of the operation of prostatectomy, and has presented us with anesthetics other than ether which excludes the time element as an important factor.

The choice of anesthetic is of great impor-

tance in prostatic surgery. It has always been desirable when employing ether to use a minimum amount and to perform the operation as rapidly as possible on account of the depressing effect of ether on the kidneys. Spinal anesthesia has been used largely throughout the country, but it has not been unaccompanied by danger. However, in our experience, Labat's method of employing this type of anesthetic has reduced its danger to a minimum; it has been devoid of complications or ill effects. The combined transsacral and abdominal infiltration with novocain affords an ideal anesthesia. For the past six months all operations for removal of the prostate gland have been performed by the use of one or the other of these anesthetics. They eliminate the time element from the operation and allow wide open exposure of the bladder, affording thorough exploration and visual removal of the gland, with accurate control of the bleeding. To the patient who is a poor risk exposure and accuracy in the operation are exceedingly important, for he is intolerant to post-operative bleeding.

Important details in the one-stage operation are (1) careful suturing of the bladder neck, which is the source of most of the bleeding, (2) control of the bleeding from the interior of the prostatic capsule, and (3) accurate closure of the bladder. Various methods have been devised to control the bleeding from the interior of the prostatic capsule. The Pilcher bag is being used successfully in the Clinic for this purpose; by its use all of the suprapubic tubes may be removed from the bladder the day following operation, and a urethral catheter inserted, which in the majority of cases allows the wound to heal by first intention, with no urinary drainage suprapubically after the removal of the bag. The convalescence is materially shortened in these cases.

The mortality rate in the operation of prostatectomy has been greatly reduced during the past few years. This has been due to (1) the recognition that these patients are potentially uremic, and that treatment of the actual or potential uremia is necessary before operation, (2) the increased technical accuracy of the operation, and (3) the elimination of ether as the anesthetic. Greater care in the selection of cases,

more accurate determination of when the patient is ready for operation, and the use of anesthetics that do not depress the kidneys should reduce the mortality rate to approximately 1 per cent. Suprapubic prostatectomy is productive of excellent functional results and is devoid of any of the complications of the perineal operation. The results of operation have recently been determined by questionnaires sent to 614 patients. Ninety-four and five-tenths per cent report that they are cured or markedly improved.

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## DISCUSSION

Our recent experience has convinced us that sudden withdrawal of all the urine from a chronically distended bladder in the presence of marked renal insufficiency is a factor in the causation of sudden uremia. The gradual decompression method has practically eliminated the precipitation of uremia by the use of the catheter or suprapubic drainage.

Infection of the prevesical space has largely been eliminated by the preliminary drainage and irrigation of the bladder through a permanent urethral catheter and by opening the bladder during the operation only after it has been emptied of urine and wash water. Heretofore, when the bladder has been distended, before incising it the operative field has been flooded and infection disseminated throughout the wound.

I wish to express my appreciation of the invitation to be present at the initial meeting of the Northern Minnesota Medical Society. I hope that with the growth of this society it will become as valuable an organization to you as the Southern Minnesota Medical Society is to us.

## GENERAL THERAPY IN DISEASES OF CHILDREN\*

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Institution of therapy, in non surgical diseases of children, usually calls out the prescription pad and a struggle with Latin terminations ensues. The struggle, however, is often avoided by simply prescribing X, Y, & Co.'s., cough mixture or some proprietary "tonic". It is time for us to appreciate treatment in a much broader sense.

The dictionary in defining therapeutics states that "it not only includes the administration of medicines but also the application of hygiene, dietetics, atmosphere and other non-medical influences to the preservation, or recovery of health." Because of lack of interest or time the non-medical agencies are too often omitted.

In pediatric therapy drugs play a minor role—non-medical treatment is of far greater importance. However, drugs need not be entirely discarded. What I wish to emphasize is the importance and the application of a few therapeutic agencies which include:

Diet, Water, Heliotherapy, Rest, Occupational Therapy, and Training and Discipline.

The use of these measures make great demands upon the physicians time and patience. The rationale must be given the mother, directions must be explicit, no detail omitted. There are few dramatic experiences in the pediatricist's daily rounds, rather it seems an endless chain of petty detail. But there is compensation in the fact that his work is largely in the field of preventive medicine.

## DIET

Early ideas of diet were vague. Food was considered a "filler" to appease hunger and incidentally provide heat and energy. Later it was shown that a good diet should consist of proper proportions of protein, fat, carbohydrates, mineral salts and water. Then there developed the method of determining the calorific values of foods and the caloric requirements of the individual. It appeared that the study of diet was

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reduced to an exact science. But it was soon demonstrated that calories alone would not keep one alive.

It was observed that children fed on diets poor in vegetables and fruits became constipated, anemic and fell into poor nutritional states. Since Barlow's time it had been known that the lack of fresh foods would produce scurvy, a condition miraculously curable with orange juice.

Eijkman<sup>1</sup> in 1897 noted that fowl fed on polished rice became paralyzed and developed symptoms of beriberi. Hopkins<sup>2</sup> in 1912 showed that although an experimental animal were fed proper amounts of the recognized food elements in a *pure state* the animal died. The fatal deficiency was overcome if a little fresh milk were added to the dietary.

Funk<sup>3</sup>, in 1912, coined the term "Vitamin" for this essential but unknown element. It was soon learned that not all fresh foods possessed this protective property in adequate amounts. Even milk varied in this respect according to the food provided the cows. Dutcher<sup>4</sup> showed the vitamin content of the milk was greatest when the cows were eating green grass. It is proven that for animals the source of vitamins is plant life. The ultimate source however, is the soil and the vitamin content of plants varies with the character of the soil. Offspring of parents suffering from a lack of vitamins in the diet likewise present symptoms of the deficiency.

The literature on vitamin is already voluminous. There exists much confusion and our knowledge of them is fragmentary. They have not even been isolated chemically—neither have the toxins of bacteria, nor the body ferments. There have been described the water soluble vitamin of yeast and cereals, curative for beriberi—the antiscorbutic vitamin of orange juice and other fruits and vegetables—the fat soluble or growth vitamin of butter and codliver oil. Byfield<sup>5</sup> has shown that orange juice besides its antiscorbutic vitamin possesses growth producing properties as well. It is probable that the problem is complex—that substances from all these sources are necessary for proper nutrition and growth and that we should get away from the idea of specific vitamins.

However little we know about vitamins this fact is established—they are very unstable. Ex-

perience has long taught the excellence of fresh foods—that the exclusive use of desiccated and canned food produces scurvy. However, it is not simply a matter of drying and canning. Hess<sup>6</sup> has pointed out various factors and concludes that vitamins are destroyed by prolonged heating, desiccation, ageing, oxidation, and chemicals such as alkalies.

But there are paradoxes in the problem. Though tomato juice is sterilized and canned it may maintain its vitamin content for a long time, if oxidation is prevented—perhaps because of the high acidity of the tomato. Contrary to common belief he showed that milk suffers less in vitamin loss if boiled for two minutes than by pasteurization. Stranger still, when milk is subjected to very high temperature for a few seconds, as in the Just roller process of producing dried milk—it maintains almost its full vitamin content.

Deficiency of vitamins predisposes to infections, produces constipation, loss of appetite, and varied indispositions. This probably explains the former use of sulphur with molasses and other "spring tonics". Long continued lack of vitamins in the dietary may lead to deficiency diseases.

The deficiency diseases which we encounter in pediatrics resulting, in part at least, from lack of vitamins are scurvy, rickets, polyneuritis, certain types of atrophy, certain types of malnutrition.

These disorders are chronic in character, the condition often resulting only after long periods of dietary imbalance. Well advanced cases are easily recognized. But I wish to emphasize that in the earlier stages, though we cannot specifically diagnose deficiency disease we are well aware that the child is not doing well. There may be pallor, stationary weight, anorexia, hyperirritability and inactivity. Doubtless in the future we will recognize many symptom complexes chargeable to improper diet.

Of course malnutrition may flourish as a result of the lack of all food elements as is illustrated in Austria today. But this is not the status of the average American child. In fact these disorders are often found more prevalent in the homes of the wealthy than in the poorer families. It is a question of proper selection of

foods and not of financial ability to provide proper diet.

What is the practical application of these facts in our work? Remembering that our knowledge is rapidly growing and our ideas of diet consequently changing one may state that the following tenets appear well founded.

(a) The ideal infant food is mother's milk. Though more rarely than in the artificially fed, still, scurvy and rickets do develop in the breast fed—perhaps as the result of constitutional states in the mother or deficiencies in her diet.

(b) For the artificially fed infant some simple milk mixture containing the proper amounts of protein, carbohydrate and fat is best. Sterilization by boiling for two minutes lessens the danger of infectious diarrheas and destroys less of the vitamins than the process of pasteurization. Under certain conditions a good dried milk may be better than a poor natural milk.

(c) Some antiscorbutic such as orange or tomato juice should be added to the diet of the artificially fed child as early as the second month—and to that of the breast fed child as well if it is not prospering.

(d) Vegetables should be a part of the baby's diet at the age of six to eight months.

(e) In older children the diet should be well balanced, the caloric intake sufficient and ample vitamins provided.

In many homes this means a radical change from highly refined foods to courser, simpler ones.

(f) Certain obscure nutritional disturbances showing atrophy, loss of hair, varied skin lesions, polyneuritis and mental apathy clear up on good hygiene and forced feeding of vitamin containing foods such as milk, butter, fruits, vegetables and yeast.

Hess states:—"One of the most novel medical conceptions is that serious diseases or functional disorder may be occasioned by a mere lack of certain constituents in the dietary. Until recently we were wont to associate tissue damage or functional disturbances solely with the introduction of some harmful foreign substances—chemical or bacterial—into the body. It is not only remarkable but also creditable that a concept so revolutionary should have gained wide acceptance in so short a time, not only among

the medical and scientific world, but among the public at large—".

We must wake up to the importance of this subject and be prepared to advise our patients on matters of diet or we will see the rise of diet fads and "vitaminopaths." Already the papers announce that a certain yeast producing concern is prepared to cure most of the ills of mankind with its product.

#### WATER

We all appreciate and use hydrotherapy to some extent. But it has a very intimate use in therapy which is not fully recognized. Water comprises 75 per cent of the infant's weight and is a big factor in its unstable metabolism. As a result of vomiting and diarrhea children develop acidosis. A similar state may develop in pneumonia, scarlet fever, in fact in most acute infections. Marriott<sup>1</sup> has shown that this is due to loss of body fluids—dehydration. He has shown that in dehydrated infants the blood volume may be reduced to as low as one-eighth the normal. It is evident that the blood flow will suffer like reduction—for instance, the blood flow through the lungs will be reduced to one-eighth the normal. This leads to suboxidation and results in the collection of acid products in the blood, intoxication and acidosis. The cure for this condition is not some specific drug but the introduction of water into the body. Too often the need of water is not fully appreciated—but rather because of the intoxication calomel or other drastic cathartics are exhibited. This leads to the loss of more water by bowel and exaggerates the condition. Or again differentiation between hunger and thirst is not recognized the infant is offered quantities of milk which it takes to relieve thirst with resultant vomiting, diarrhea and increased intoxication.

Balsar, Sansum and Woodyatt<sup>2</sup> postulate that the water level of the body is a big factor in fever. Fever occurs in dehydration—with abundant water in the tissues fever is lowered, in part at least, by evaporation of fluids.

With but few exceptions the first desideratum of the acutely ill child is water. Water should be given in large amounts. If there is no vomiting it may be given by mouth—not haphazardly but in measured amounts at stated intervals. We have seen an infant of five months take up



to two and one-half quarts in the 24 hours. By bowel a considerable quantity may be given by the Murphy drip. Sometimes one has greater success by instilling small amounts at frequent intervals. In the presence of vomiting and diarrhea normal saline may be given subcutaneously, or into a vein or the superior longitudinal sinus. The two latter procedures however, are difficult. We have had brilliant results from injecting normal saline directly into the peritoneal cavity. We have given an infant up to 300 cc. in this manner with what appeared to be a life saving effect.

In severe cases a combination of methods may be employed. For its nutritional value dextrose from 3 per cent to 5 per cent may be added. We have yet to see virtue in the administration of sodium bicarbonate in acidosis—if water does not avail soda will not.

#### HELIO THERAPY

Heliotherapy is a powerful therapeutic agent too little employed. Rollier<sup>9</sup> pointed the way in his treatment of "surgical" tuberculosis. It is of value in many skin lesions. It stimulates appetite and well being. It powerfully affects metabolism—the white count can be doubled by exposures to sunshine; it aids in raising the hemoglobin. It is almost as applicable at our altitude as in the mountains of Switzerland—we have the same sunshine here. It is not an agent to be used carelessly—too abrupt an exposure for too long a time produces intoxication. An exact technique must be employed which one can find in articles by Rollier, Dietrich<sup>10</sup> and others.

#### REST

In many undernourished, hyperirritable children with but little resistance to infection nothing succeeds as well as a period of rest in bed with forced feeding and massage. We have repeatedly seen children gain from ten to twenty pounds in a month of this regimen. It is almost impossible to measure the benefits of such results.

#### OCCUPATIONAL THERAPY

In chronic disease or protracted convalescence we too often expect our little patients to be oblivious to everything except getting well. It is too much to ask of them. Exercises, occupational tasks, such as basket weaving and kindergar-

ten stunts make the child happier, stimulate appetite, promote sleep, and hasten recovery.

#### TRAINING AND DISCIPLINE

Very often a carefully worked out plan of treatment fails because of lack of cooperation on the part of an ill natured, spoiled, badly trained child. In such an instance training and discipline become a part of the treatment. This again is the duty of the physician to prescribe and direct—it cannot be left to an hysterical mother. Czerny<sup>11</sup> has written a delightful little book—*The Physician as a Trainer of the Child*. One can profit much by its perusal.

#### SUMMARY

1. The most profound influence on the growth and development of the child is diet. Its regulation cannot be left to the child's tastes, the mother's whims and the grandmother's superstitions. It is properly a subject for the physician's study and prescribing.
2. In many acute diseases the control of water balance is of paramount importance.
3. In the treatment of disease and maintenance of health accessory factors such as heliotherapy, rest, occupational therapy, training and discipline always aid and often supplant drug treatment.

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## A COMPARISON OF SOME MUNICIPAL HEALTH BUDGETS

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A comparison of the expenditures in various cities for the promotion of public health through the municipal health department is rendered somewhat difficult by the fact that there is as yet no general agreement as to what properly constitutes public health work. Certain cities are obviously more progressive than others and have taken a more modern and enlightened view of their responsibilities in this field. This lack of agreement in practice makes necessary a preliminary discussion of the underlying principles of municipal health protection.

Among the sources of information readily available are the report of the Cleveland Hospital and Health Survey<sup>1</sup>, the report of the study of the State Charities Aid of Sickness in Dutchess county, New York<sup>2</sup>, the report of the Community Health and Tuberculosis Demonstration in Framingham, Massachusetts<sup>3</sup> and the report of a committee representing the New York Department of Health, The New York Comptroller, The New York State Conference of Mayors and other City Officials on a Uniform Budget and Accounting System for Municipal Departments, Bureaus of Boards of Health<sup>4</sup>. Special articles by Chas. V. Chapin, Superintendent of Health<sup>5</sup>, Providence, Rhode Island, and by Carroll Fox<sup>7</sup> of the United States Public Health Service, deal with the same subject.

Dr. Donald B. Armstrong<sup>6</sup>, Executive Officer of the Community Health and Tuberculosis Demonstration, Framingham, Mass., has made the following classification for the average New York state city.

(A) Health measures of prime importance.

1. The suppression of communicable and industrial disease.
  2. The reduction of infant mortality.
  3. The control of the milk and the water supply.
  4. The medical inspection of school children.
  5. The study of contact and secondary infections and the control of disease carriers.
  6. The control of hereditary and congenital disease factors.
  7. Birth, death and marriage statistics.
  8. Publicity and Educational work.
  9. Sanitary research.
- (B) Health measures of secondary or indirect importance.

1. The control of housing conditions and other environmental factors.
2. The inspection of food and drugs.
3. The handling of municipal wastes.
4. The suppression of nuisances.
5. Insect and rodent elimination.
6. Plumbing inspection, smoke inspection, etc.

Dr. Armstrong mentions the cleaning of streets and the removal of garbage as measures of secondary importance or of indirect importance. Public health is purchaseable he says and so is public decency. It is very pleasant to have garbage removed and it is not very decent to have it lying around but the removal or non-removal has very little influence on our morbidity or mortality rates.

Dr. Charles V. Chapin, Superintendent of Health, Providence, has offered the following table of relative values not as final but to serve as a basis of discussion<sup>5</sup>.

### RELATIVE VALUES OF HEALTH WORK

Vital statistics .....	60
Education .....	80
Laboratory .....	50
Control of nostrums .....	50
Care of sick poor .....	50
Food Sanitation .....	10
Milk adulteration .....	3
Milk sanitation .....	17
Nuisances	
Privy sanitation .....	60
Housing .....	20
Plumbing .....	10
Nuisances .....	10
Refuse removal .....	0
Fly and mosquito control .....	10
Infant mortality	
Nurses .....	80

Supervision of midwives .....	10
Babies boarding houses .....	5
Milk stations .....	5
Consultations .....	20
Prenatal clinics .....	10
School inspection .....	80
Contagious diseases	
Home isolation .....	100
Hospitalization .....	50
Immunization .....	50
Venereal disease .....	20
Tuberculosis	
Nurses .....	60
Dispensaries .....	40
Hospitalization .....	40
	1,000

Dr. Chapin's table may be summarized as follows:

Control of communicable disease .....	360
Child welfare .....	210
Education and vital statistics .....	140
Sanitation, nuisances, etc. ....	110
Food inspection, etc. ....	30
Laboratory .....	50
Miscellaneous .....	100
	1,000

According to these authorities the field of public health has developed and changed greatly during the past few years. Originally it was principally concerned with the maintenance of decency and later with isolation and quarantine, but its functions now include education of the individual in the protection of his health and incidentally in the promotion of the health of the community. Child welfare work, that is, the securing of health for the coming generation, has in consequence become one of its principal responsibilities. The obtaining of accurate knowledge of the facts of disease by research in laboratories and hospitals and the education of the public in every legitimate way regarding these facts now largely takes the place of the compulsion so largely relied upon in the first two stages of the work. In this new kind of health work "the nurse supplants the nuisance inspector and the physician takes the place of the policeman." Appeal is made to the enlightened self-interest of the public and is accompanied by reasonable persuasion. The strong arm of authority is used less frequently.

A uniform budget and accounting system for municipal departments of health was prepared by a New York State Committee in 1919'.

In prefacing its report, the committee made the following statements:

"Corrective comparative data about appropriations and expenditures by cities for public health work are not obtainable at the present time because:

(1) Of a lack of uniformity of budgets and departmental accounting systems.

(2) A misinterpretation or misconception of what are proper public health activities.

(3) Some cities so limit the amount to be raised by tax for municipal purposes other than health work, that they are compelled to include in health budgets the appropriation for activities which do not properly belong there.

"In the health budgets of some cities, appropriations for garbage, ash and rubbish collection and disposal, plumbing inspection, maintenance and operation of sewers and sewage disposal plants and other sanitary activities such as fumigation and inspection are included. In the health budget and departmental accounting system which we have prepared we have included only those activities which are now generally regarded by health authorities as proper health activities."

The budget proposed contains the following main headings:

- I. Administrative Expenses.
- II. Isolation of Patients.
- III. Public Health Laboratory.
- IV. Public Health Centers.
- V. Tuberculosis Clinic.
- VI. Child Welfare Stations.
- VII. Venereal Disease Clinic.

Subdivisions under each head are:

1. Salaries, wages and fees.
2. Materials and supplies.
3. Expenses.

As stated by Dr. Chapin, "the older communities have now largely outgrown the first stages of public health work. The streets have been sewerred, the privy vaults abolished and good water supplies, properly cared for, have been secured. The public works or engineering departments should look after the maintenance and extension of these improvements.

There are a vast number of minor nuisances connected with the care of cellars, lots, garbage disposal, dumps and defective drainage which it

is still the fashion of the health department to look after, though usually they have scarcely the remotest relation to health. All this should be turned over to the police department."

With the foregoing considerations in view, it becomes possible to compare more profitably the activities and appropriations of health departments in various cities. The functions and duties of health departments are essentially the same in all cities regardless of size. As a city increases in size, more and more subordinate officials are needed but every activity of the large health department should have its counterpart in the smaller organization.

In response to inquiries from Assistant Secretary Lee of the Duluth Commercial Club and the Vice Chairman of the Public Health Committee more or less complete replies have been received from seventeen cities.

The principal sub-divisions of their work were as follows:

1. Administration.
2. Vital statistics.
3. Education.
4. Laboratories.
5. Control of communicable disease.
6. Tuberculosis.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Bridgeport.	+	+	..	+	+	..	..	..	..	..	..	+	..	+	..	..	..	..	+	+	+	..	..
Boston .....	+	+	..	+	+	..	..	..	..	+	..	..	..	..	+	..	..	..	+	+	..	..	..
Buffalo .....	+	+	..	..	..	+	+	..	..	..	..	..	+	..	..	..	..	+	+	..	..	+	..
Cleveland ..	+	+	..	+	+	+	..	..	..	..	..	..	..	..	..	..	..	..	+	+	..	..	..
Chicago ....	+	+	..	+	+	..	..	..	..	+	..	+	+	..	..	+	+	+	+	+	..	..	..
Dallas .....	+	+	+	..	+	..	..	..	..	..	..	+	..	..	..	+	..	..	+	+	..	..	..
Dayton .....	+	+	..	..	..	..	..	+	..	..	..	..	..	..	..	+	..	..	+	+	..	..	..
Duluth .....	+	..	..	..	+	+	+	..	+	+	..	+	..	..	..	..	..	..	..	+	+	..	+
Milwaukee .	+	+	..	+	+	+	..	..	+	..	+	..	+	..	..	+	..	..	+	+	..	..	..
Minneapolis	+	+	..	+	+	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..
New York..	+	+	+	+	+	..	..	..	..	+	..	+	..	..	..	..	..	..	+	+	..	..	..
Reading ....	+	+	+	+	+	..	..	..	..	..	..	..	..	..	..	..	..	..	+	+	+	+	..
Somerville .	+	+	..	+	+	+	..	..	+	..	..	..	+	..	..	+	..	..	+	+	..	..	+
Spokane ...	+	..	..	..	+	+	..	..	+	..	..	..	..	..	..	..	..	..	..	+	..	..	..
St. Louis...	+	..	..	+	+	..	..	..	+	+	+	..	..	..	..	+	..	..	+	+	..	..	..
Tacoma ....	+	..	..	+	+	..	..	..	..	..	..	..	..	..	..	..	..	..	+	..	..	..	..
Youngstown	+	..	..	..	+	..	..	..	+	+	..	..	..	..	+	..	..	..	+	+	+	+	..
Total....	17	12	2	12	14	5	3	..	8	5	3	6	4	1	2	6	1	2	15	14	4	3	2

From the table it can be seen that there is considerable variation in the scope of the work undertaken in different cities but that on the whole, health work throughout the country is developing along the lines mentioned in the preceding discussion.

It will be seen that the activities conducted by

7. Venereal disease.
8. Maintenance of general hospital.
9. Maintenance of contagious hospital.
10. Maintenance of small pox hospital.
11. Maintenance of tuberculosis sanatorium.
12. Child welfare.
13. School inspection.
14. Health centers.
15. Dental hygiene.
16. Division of nursing.
17. District physicians.
18. Maintaining of bath houses.
19. Sanitation.
20. Food inspection.
21. Garbage collection or reduction.
22. Plumbing and drainage supervision.
23. Cattle inspection.

None of the cities reported all the sub-divisions mentioned and some of them only a few. Letters were sent to a number of other cities but the replies received were not sufficiently detailed to admit of comparison with those inclined in the table.

The various cities sub-divided their work as follows, the numbers used, representing the sub-divisions enumerated above.

Note:—In the case of St. Louis it was not clear from the report whether the activities enumerated were all directed by the health department.

the health departments are usually classified as follows:

	Cities
1. Administration	17
2. Control of communicable disease	14
Special division for tuberculosis	5
Special division for venereal disease	3



Maintenance of contagious hospital	8
Maintenance of detention hospital	5
3. Child welfare	6
Special classification for school inspection	4
4. Sanitation, nuisances, etc.	15
5. Food inspection	14
6. Vital statistics	12
7. Laboratories	12

The above divisions therefore constitute the principal work of most health departments at the present time. Garbage collection or reduction was still assigned to the health department in 4 cities while in 3 the department had supervision of plumbing and drainage.

The expenditure for the work of these various sub-divisions was not always indicated. The following tables show the amounts used in certain cities:

## ADMINISTRATION

City	Source of Information	Population	Amount	Per Capita
Boston	Annual Report, 1919.....	748,060	\$46,004.92	.061
Buffalo	Annual Report, 1919.....	506,775	22,373.26	.044
Cleveland	Appropriation, 1920.....	796,836	6,650.00	.008
Chicago	Appropriation, 1920.....	2,701,705	96,400.00	.032
Dallas	Budget, 1919-1920.....	158,976	9,527.44	.059
Duluth	Budget, 1921.....	98,917	7,600.00	.077
Milwaukee	Budget, 1920.....	457,147	25,045.00	.055
Minneapolis	Appropriation, 1920.....	380,582	17,582.00	.046
New York	Budget, 1921.....	5,621,151	6,504.15	.115
Reading	Budget, 1920.....	107,784	4,675.00	.043
Somerville	Auditor's Report, 1919.....	93,091	4,330.89	.046
				.586
Average 11 Cities.....				.058

## COMMUNICABLE DISEASE

City	Source of Information	Population	Amount	Per Capita
Buffalo	Annual Report, 1919.....	506,775	\$27,057.22	.053
Chicago	Appropriation, 1920.....	2,701,705	184,717.97	.068
Cleveland	Budget, 1920.....	796,836	136,378.00	.170
Dallas	Budget, 1919-1920.....	158,976	395,266.00	.024
Duluth	Budget, 1921.....	98,917	20,455.00	.206
Milwaukee	Budget, 1920.....	457,147	43,136.00	.096
Minneapolis	Appropriation, 1920.....	380,582	9,768.00	.025
New York	Budget, 1921.....	5,621,151	559,837.00	.091
Reading	Budget, 1920.....	107,784	1,034.00	.009
Somerville	Auditor's Report, 1919.....	93,091	7,689.03	.071
				.813
Average 10 cities .....				.081

## CHILD WELFARE

City	Source of Information	Population	Amount	Per Capita
Bridgeport	Letter from H. O., 1920.....	143,538	\$37,313.31	.260
Buffalo	Annual Report, 1919.....	506,775	70,065.47	.014
Chicago	Appropriation, 1920.....	2,701,705	217,495.00	.080
Cleveland	Budget, 1920.....	796,836	80,304.00	.010
Dallas	Budget 1919-1920.....	158,976	5,595.00	.036
Duluth	Budget, 1921.....	98,917	2,905.00	.029
Milwaukee	Budget, 1920.....	457,147	48,849.00	.115
New York	Budget, 1921.....	5,621,151	951,458.00	.161
				.705
Average 8 cities .....				.088

## SANITATION

City	Source of Information	Population	Amount	Per Capita
Boston	Annual Report, 1919.....	748,062	\$72,464.03	.096
Buffalo	Annual Report, 1919.....	506,775	38,046.38	.075
Chicago	Appropriation, 1920.....	2,701,700	172,910.00	.064
Cleveland	Appropriation, 1920.....	796,838	60,170.00	.075
Dallas	Budget, 1919-1920.....	158,976	1,640.50	.010
Duluth	Budget, 1921.....	98,917	13,385.00	.135
Milwaukee	Budget, 1920.....	457,147	48,725.00	.015
Minneapolis	Appropriation, 1920.....	380,582	9,768.00	.054
New York	Budget, 1921.....	5,621,151	313,933.00	.055
Reading	Budget, 1920.....	107,784	3,775.00	.035
				.614
Average 10 cities .....				.061

## A COMPARISON OF SOME MUNICIPAL HEALTH BUDGETS

## FOOD INSPECTION

City	Source of Information	Population	Amount	Per Capita
Buffalo	Annual Report, 1919.....	506,775	\$37,701.77	.075
Chicago	Appropriation, 1920.....	2,701,700	160,905.00	.059
Cleveland	Budget, 1920.....	796,836	49,994.00	.062
Dallas	Budget, 1919-1920.....	158,976	11,766.80	.077
Duluth	Budget, 1921.....	98,917	8,725.00	.088
Milwaukee	Budget, 1920.....	457,147	43,735.00	.095
New York	Budget, 1921.....	5,621,151	332,223.00	.059
Reading	Budget, 1920.....	107,784	3,675.00	.026
Somerville	Auditor's Report, 1919.....	93,091	5,930.74	.063
				.604
Average 9 cities .....				.067

## VITAL STATISTICS

City	Source of Information	Population	Amount	Per Capita
Boston	Annual Report, 1919.....	748,060	\$7,647.42	.010
Buffalo	Annual Report, 1919.....	506,775	27,685.74	.054
Chicago	Appropriation, 1920.....	2,701,705	50,370.00	.018
Cleveland	Budget, 1920.....	796,836	7,029.00	.009
Dallas	Budget, 1919-1920.....	158,976	2,751.60	.017
Milwaukee	Budget, 1920.....	457,147	6,523.00	.014
Minneapolis	Appropriation, 1920.....	380,582	4,380.00	.011
New York	Budget, 1921.....	5,621,151	115,693.00	.020
Reading	Budget, 1920.....	107,784	1,080.00	.010
Somerville	Annual Report, 1919.....	93,091	1,131.74	.012
				.175
Average 10 cities .....				.018

## LABORATORIES

City	Source of Information	Population	Amount	Per Capita
Buffalo	Annual Report, 1919.....	506,775	\$43,382.33	.085
Chicago	Appropriation, 1920.....	2,701,705	40,971.20	.015
Cleveland	Budget, 1920.....	796,836	34,468.00	.043
Milwaukee	Budget, 1920.....	457,147	17,645.00	.038
Minneapolis	Appropriation, 1920.....	380,582	9,240.00	.024
New York	Budget, 1921.....	5,621,115	300,109.00	.053
Reading	Budget, 1920.....	107,784	1,230.00	.011
				.269
Average 7 cities .....				.038

The averages obtained may be summarized as follows:

Department	Cities	Average Annual Per Capita	Sanitation and nuisance prevention	Amount	Per Capita
Communicable diseases.....	10	.081	Bakery inspection.....	13,385.00	.135
Administration .....	12	.049	Meat inspection.....	1,745.00	.018
Child welfare.....	8	.088	Milk and dairy inspection.....	1,780.00	.018
Sanitation .....	10	.061	Isolation Hospital.....	5,200.00	.052
Food inspection.....	9	.067	Contagious Hospital.....	6,035.00	.061
Vital statistics.....	10	.018	Cattle Inspection.....	18,385.00	.196
Laboratories .....	7	.038	Incineration .....	4,985.00	.050
		.402	New equipment.....	12,925.00	.130
				11,360.00	.115
				\$106,760.00	1.087

## DEPARTMENT

Most of these cities spend additional sums from their health budget for certain of the other purposes enumerated above, which have more or less relation to either public health or municipal house cleaning.

The total budget for 1921 of one city of about 100,000 population contains the following items:

	Per Capita
General administration.....	\$ 7,600.00 .077
Communicable diseases.....	16,900.00 .170
Prevention of tuberculosis.....	3,555.00 .036
Child welfare.....	2,905.00 .029

This city is spending this year (1921) \$106,760.00 for the work of the health department or \$1.09 per person. Many cities are not spending nearly as much but, as said before, totals are difficult of comparison on account of differences in the work assigned to the health department in different cities. A large per capita expenditure through the health department does not necessarily mean expenditure for public health purposes in the modern sense of the term.

In Framingham, Massachusetts before the Community Health and Tuberculosis Demonstration began in December 1916 the annual ex-

penditure was forty cents per capita'. Now the community is spending \$2.00 per capita annually from both public and private sources. In the view of Dr. Armstrong, the executive officer of the Demonstration, for a city of 100,000 population the annual health budget should be at least \$200,000 a year from both public and private sources.

The Russell Sage Foundation in its survey of the activities of Municipal Health Departments in the United States published in 1916<sup>10</sup>, recommended a one dollar per capita appropriation for real preventive measures as desirable although a dollar was then worth much more than it is today.

If used strictly for health purposes in the present sense of the term, the 1921 appropriation of the city referred to would be considered fairly ample; but further analysis of the provisions of the budget indicate that it is insufficient. Thirteen and a third cents per capita are used for an incinerator which should be taken care of under another department. The maintenance of hospitals should probably not be a charge against the health fund and this amounts to twenty-seven cents more. The amount spent for food inspection is higher than the average in the other cities and the amount for sanitary inspection and nuisances is considerably more than the average. In all about \$50,000.00 is included in the health fund for these various purposes which properly should be provided from some other fund or source. If the same amount were assigned to the health department for public health work of the character now considered most valuable, the department could extend its activities along such lines. It would have more to spend for the prevention of infant mortality and the promotion of child welfare; it could provide for health centers, employ more nurses, establish nutritional clinics, extend its tuberculosis and venereal disease work especially as regards the follow-up of patients coming for diagnosis or discharged from institutions, to see that treatment at public expense did not fail of results in permanent improvement of health; it could promote healthful conditions among the workers and in general do work that will have more influence in reducing the death rate than the inspection of nuisances or the destruction of garbage. A good beginning

has been made along several of these lines but development of the work has been hampered by lack of funds.

It will be noted that this city spends a larger amount for the control of communicable disease than the average expenditure in nine other cities. This is to the credit of the city if properly used. The appropriation for child welfare should be much larger than at present even though it is true that a considerable additional amount (about \$13,000.00) is now expended through the Board of Education for school inspection.

*Hospital Provision.*—Treatment of patients in hospitals is necessary and desirable and it is right that public funds should be spent to aid in their maintenance. Special hospitals for contagious disease and tuberculosis are needed in every large community but the money spent in providing proper care for those suffering from disease should not be deducted from nor absorb the funds needed for other preventive measures. The approximate amount now furnished by public taxation toward the support of the hospitals of Cleveland, Ohio, is \$1,086,000.00. The Cleveland Hospital and Health Survey<sup>1</sup>, however, recommends the addition of 1500 beds to the hospital capacity of Cleveland including both general and special hospitals and this would undoubtedly increase considerably the need of municipal expenditure for hospital purposes, making due allowance for all income and gifts. The maintenance of a tuberculosis sanatorium is a necessary health measure but the expense of conducting the institution should not be deducted from the health departments budget and the same principle holds good regarding contagious hospitals.

One may, however, look forward to the day when, as the result of adequate expenditures for prevention of disease, less outlay will be needed for hospitals.

According to the Cleveland Survey<sup>1</sup> there should be about five beds for each 1,000 of the population served. The same quota is used in New York and Boston Health plans<sup>1</sup>. A city of 100,000 which is a medical center for a population two or three times as large, should probably have about 1,000 hospital beds even when allowance is made for some hospital provision in smaller cities in the same area.

*Nursing.*—According to Dr. Armstrong of the Framingham Demonstration", an adequate nursing service for a community requires the employment of at least one visiting nurse, or public health nurse, for each 3,000 people.

The Cleveland Hospital and Health Survey recommends the same rate<sup>1</sup>.

The Committee on Sickness in Dutchess county, New York, recommended the employment of 35 trained visiting nurses for a population of 88,225<sup>2</sup>.

Allowing one nurse to every 3,000 people, a city of 100,000 should have about thirty three visiting nurses.

These nurses are needed for the adequate follow-up of patients with venereal disease and tuberculosis, for the extension of child welfare work, for assistance in clinics and health centers and for the education of the public in healthful living. In short, they are indispensable agents in the new public health work.

*Health Centers.*—Eight health centers are operated by the city of Cleveland. Various clinics including tuberculosis, child welfare and dental clinics are regularly held there. Such centers should serve as headquarters for the visiting-nurse work and as means for coordinating the health work of private organizations. The Cleveland Survey states that these centers meet a real need and that one should be provided for each 50,000 of the population.

Similar centers are being started by the American Red Cross for demonstration purposes throughout the country. The cooperation of the local Red Cross Chapter, the County Medical Association and the County Public Health Association can easily be counted upon in the starting of such enterprises.

*Industrial Hygiene.*—The Cleveland Health and Hospital Survey recommends that there be established within the municipal division of health a bureau of industrial hygiene. The functions of such a bureau would be to study the health needs of various industries, cooperate in an advisory capacity with industrial nurses and physicians, assume responsibility for the maintenance of the health of city employees, of food handlers, operators of public conveyances and in all possible ways aid the efforts of employers and labor unions to secure healthful

working conditions. If the time has not yet come for the establishment of such a bureau in a city, there should nevertheless be continuous study of industrial needs as regards public health and provision for meeting them.

*Laboratory and Vital Statistics.*—Accurate data should be available concerning the prevalence and severity of the various preventable diseases. The furnishing to physicians of laboratory help in making prompt and accurate diagnosis of diseases is therefore a necessary preliminary to combating them successfully. The provision of such facilities without charge is not charity but public health protection.

The records of even the ordinary routine tests furnish valuable statistical material but every city laboratory should be a reasonable research center as well as a diagnosis station.

The correlation and interpretation of the results of the various tests and studies made and of the various reports included under the head of vital statistics, require the employment of trained statisticians and investigators if the statements given out regarding health and disease are to be reliable and useful.

*Education.*—The education of the public regarding health protection is being given a larger place in the public health program than formerly. Every means known to the professional advertiser for spreading information is considered legitimate, including the free use of printers ink, of bill boards, moving pictures, county fair booths, special exhibits, health clowns, etc., but the health department as well as the lay crusader should keep close to facts and not bring discredit on the whole movement by exaggerated or misleading statements.

Truth in advertising is as important in public health work as in any wholesale or retail business and the public demands it.

*The Place of Unofficial Organizations in Public Health Work.*—Private organizations can be of the greatest assistance to the health department in securing public support for up-to-date measures. Health committees of commercial bodies, Rotary clubs and similar organizations have here a great opportunity. It is well that the health activities of all such organizations should be correlated with those of a volunteer public health association. The principal func-



tion of such an association are the studying of methods and furnishing to the public of reliable information on health matters. Where necessary the value of new forms of public health work may be demonstrated at the expense of the association but as soon as proven, the community as a whole should be urged to assume responsibility for their continuance.

The Report of the Investigation of Sickness in Dutchess county, New York, by the State Charities Aid Association recommends the establishment of a County Public Health Association to bring about cooperation on the part of existing organizations which, in most instances, are doing their work well in separate fields, as one of the most important measures needed to improve the health of the county.

The Cleveland Hospital and Health Survey Report (Part 2 p. 228) contains the following statement: "It is believed to be of great importance that a Cleveland or Cuyohoga County Public Health Association be formed to give direction and more effectiveness to the efforts of all the public and private agencies in the field."

In Minnesota the County Public Health Associations have just this field, their work being supported by the sale of the Christmas seals. Such an organization has a relation to the City and County official health organization similar to that which a Chamber of Commerce or Commercial Club holds to the city government. It is the function of the volunteer organization to study methods, demonstrate their value, educate the public and in general to stand behind the city and county government.

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#### POST-OPERATIVE INTESTINAL OBSTRUCTION\*

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By the term "post-operative obstruction" we mean that form of acute obstruction which immediately follows or is a direct result of an abdominal operation. Intestinal obstruction is one of the most frequent of the serious complications which follow operations on the abdomen. G. Brown Miller of Johns Hopkins Hospital reports eleven cases of intestinal obstruction in 1200 consecutive operations, 770 of which were abdominal cases, finding about one case of obstruction in 128 operations in which the abdominal cavity was opened. This is a fair index of the frequency of the condition.

#### ETIOLOGY

In a large number of cases of post-operative obstruction the condition is caused by intestinal adhesions. In simple, clean cases primary union takes place and, as a rule, no adhesions form. In a large percentage of the cases, in which the peritoneal cavity is invaded by micro-organisms, adhesions do form and obstruction may take place. Obstruction may arise from pre-existing adhesions, which have been separated at operations leaving raw surfaces which cannot be covered by peritoneum; or, they may form where raw surfaces are left as a result of operation; or, may form as a result of local peritonitis following infection. Mechanical injury, hemorrhage, and the like, no doubt, produce adhesions which may cause obstruction. Previously existing suppurative conditions in the peritoneal cavity, such as perimetritis, metritis, suppurative inflammation of the gall bladder, kidney, appendix, etc.,

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are no doubt conducive to intestinal adhesions which, in turn, may cause intestinal obstruction. If these adhesions are slight or if the gut is fixed in a favorable position the symptoms of obstruction do not arise. Treves makes the following classification as to causes of post-operative obstruction:

First—Strangulation over a band.

Second—Occlusion brought about by kinking, due to traction by an isolated band or adherent diverticulum.

Third—Occlusion affected by adhesions which retain the bowel in a bent position.

Fourth—Obstruction by means of adhesions which compress the gut.

Fifth—Obstruction by the matting together of several coils of intestine.

Sixth—Narrowing of the bowel lumen from shrinkage of the mesentery after inflammation.

In the first variety a vermiform appendix, a Meckel's diverticulum, epiploic appendage, Fallopian tube, may become adherent at its extremity to the gut, and thus form a band or cord which can compress a loop of intestine beneath it; or the intestine may be snared by this false ligament and thus form an obstruction.

Secondly, in the occlusion brought about by acute kinking due to traction, a band of adhesion becomes attached to a portion of the bowel, and, by dragging upon this point, produces acute kinking and subsequent occlusion.

Third, here an adhesion retains the bowel in a bent position, the bowel being adherent to some part of the pelvic or abdominal wall and thus causes more or less of an occlusion or resistance to peristaltic movement, and consequently forms an obstacle to the passage of intestinal contents. As the bowel contents accumulate above this point the kink tends to tighten and increases the obstruction and finally a complete stenosis occurs and symptoms of obstruction appear.

In the fourth variety, bands of adhesions are found which involve the more fixed portion of the intestine and the adhesions are more or less fixed to the pelvic or abdominal parietes.

Fifth, obstruction caused by the matting together of several coils of intestine is believed to be the most frequent cause of post-operative obstruction. These coils may be adherent to each other and to the parietes or the pelvic viscera.

The small intestine is usually involved but at times the sigmoid flexure and occasionally coils of the large and small intestine may be adherent to each other.

Sixth, narrowing of the bowel by shrinkage of the mesentery is usually the result of some acute inflammation involving the mesentery with the formation of a scar, and due to its contraction, there is a decided lessening of the intestinal calibre. However, this type of obstruction is rarely met with as a result of operation.

Volvulus, too, may be considered a source of post-operative obstruction where the intestine is drawn by a band of adhesions which give rise to a sort of pedicle over which a volvulus may form.

Intussusception has been held to be a cause of post-operative ileus but this condition is very rare.

Olshausen reports intestinal obstruction following the catching of a loop of the gut with a suture in closing the abdominal wound.

Post-operative hernia caused by premature absorption of the sutures allowing separation of the incision may cause an obstruction.

It is also stated that fecal accumulation, not due to adhesions, may cause obstruction because of the hard fecal matter in the lower bowel. This is particularly to be seen where one is not able to give an enema as in cases where an operation has been performed on the rectum, or for the repair of a complete tear of the perineum.

#### PATHOLOGY

From the foregoing, we find that the cause of intestinal obstruction is usually mechanical, that several different mechanisms may be responsible, and that angulation is a necessary factor.

Mechanical obstruction if not relieved leads to dynamic obstruction by over-distension and paralysis.

In simple mechanical occlusion of the lumen of the bowel the portion below is empty and contracted, the portion above is distended with gas and feces (stagnation meteorism) without circulatory disturbances. But as the distention increases, local meteorism develops due to the disturbance of circulation.

A.—Venous hyperemia—because veins are easily compressed, the resultant stasis produces a dark livid color, a tumefaction of the walls,

with exudation of serum into bowel and later into the peritoneal cavity.

B.—Muscular paralysis occurs in from 4 to 6 hours as a result of circulatory disturbances.

C.—Local meteorism ensues which produces further distention because of gas evolution.

D.—Thrombosis in mesenteric vessels, gangrene and perforation may result if death is not caused by absorption of toxic products.

In obstruction of an intestinal loop, the circulatory disturbance begins earlier, distention is rapid, the tissues are deeply congested and dark blue in color; ecchymotic spots appear and the mucosa and underlying tissues become the seat of gangrenous inflammation and an ideal location for the growth of bacilli of maglinant edema and bacilli coli communis.

In either case the pathological condition rapidly progresses from a very limited area, causing nervous and circulatory disturbances throughout the alimentary canal, invading the peritoneum and shortly affecting all the organs of the body.

The cause of death in acute post-operative obstruction is usually a chemical intoxication, resulting from absorption of the products of protein disintegration in the area involved as is manifest by lowered blood pressure, disturbances of temperature, vomiting, diarrhea, impaired kidney function, the congestion of duodenal and jejunal mucosa, collapse and death.

#### SYMPTOMS AND CLINICAL FEATURES

The clinical picture is not always characteristic or constant and obstruction varies greatly as to time of occurrence with reference to operation. There can be no question but that adhesions begin to form immediately after operation. The symptoms of post-operative obstruction usually make their appearance during the first two weeks succeeding operation. Most of our cases have shown symptoms of obstruction on the third day after operation, though one patient did not have any symptoms for two weeks after removal of a pus appendix, at which time it was thought safe for him to leave the hospital. However, the symptoms on the third day are often so vague that one hesitates in making a diagnosis of obstruction. One hesitates to make such a diagnosis because we do see other conditions which give a symptomatology similar to post-operative obstruction, and we hesi-

tate, indeed, to subject a patient to another operation for a condition which may not be obstruction. We are very prone, it seems to me, to say the patient is suffering from dilatation of the stomach or what not. Consultation does not always clear the air; consultant and operator may both be at sea.

We must always bear in mind the possibility of an intestinal obstruction in our post-operative cases when we find persistent vomiting, an increasing distention, epigastric distress and increasing pulse rate that do not respond to gastric lavage, enemata and proper administration of cathartics. The onset is usually insidious, passing gradually from the usual post-operative phenomena to those of acute obstruction. Early manifestations are epigastric distress, slight watery regurgitation, a distressed or "fixed" facies. The features may be drawn and pinched though the eyes may be bright and clear. The patient may or may not look very ill. The anxious expression may or may not be seen. The temperature does not usually go above normal, more frequently is slightly subnormal. Abdominal pain is seldom complained of unless colon is involved and is frequently absent. Instead of actual pain, there is usually an emphasized epigastric fullness with pressure symptoms and distress, with difficulty in breathing, shortness of breath which may be temporarily relieved by gastric lavage or vomiting. There is an absolute absence of rigidity. The peristaltic waves may pass the point of obstruction but the contents do not. As soon as peristalsis is strong enough a single large movement may empty the bowel below the obstruction. The distention, vomiting and distress or pains are not relieved by this evacuation.

The extremities soon become blue, cold, clammy, although the rest of the body seems warm. The patients often state they are feeling quite comfortable and they usually fail to realize the gravity of the situation. Vomiting or regurgitating mouthfuls of brown fluid with a fecal odor almost continuously without retching or effort soon becomes manifest. Should this fluid accumulate in the stomach for some hours it will be ejected in larger quantities and give apparent temporary relief. Let us not be misled by the absence of vomiting early in obstruction. This

happened in one of our cases; vomiting did not begin until shortly before death.

#### DIAGNOSIS

##### Intestinal Obstruction

1. Visible and palpable peristalsis as a rule present in obstruction only.
2. Feculent vomiting only when complete obstruction obtains. Incomplete obstruction may have
  - a. Flatus and feces.
  - b. Purgatives, enemas give relief.
  - c. Presence of feces in rectum relieved by enemas or purgatives.
3. Meteorism extreme, moderate or none.
4. Persistent vomiting.
5. Absence of rigidity.
6. Presence of borborygmi.
7. Slow pulse until late.
8. Normal or low leucocyte count.

#### DIFFERENTIAL DIAGNOSIS

In the group of cases developing obstructive symptoms in the course of a few days after an abdominal operation the purely obstructive symptoms may be masked by those usual in post-operative conditions. The problem here is to differentiate the two conditions, a not always easy or possible task. Time must not be lost in predetermining the location of obstruction or its character. The main fact in the diagnosis is the obstruction. It is sometimes a relief to realize that many of the conditions closely simulating acute obstruction also require surgical relief.

*Appendicitis with rupture, Renal or Biliary Calculi, Lead Colic, Ruptured Gastric or Duodenal Ulcer, Ovarian Cyst* with twisted pedicle, may be easily differentiated by the surgeon from the previous history, operative findings, etc., in any particular case.

*Gastric Crises*—a history of syphilis, a very sudden onset, the urgent vomiting, and the rise in blood pressure will usually differentiate.

*Henock's Purpura* is very rare, and gives a helpful history.

*Hernia*—usually shows itself in the common hernial openings if careful digital search is made, though difficulty may be experienced if hernia is in one of the peritoneal pouches. However, surgical relief is indicated.

*Acute Dilatation of the Stomach* may closely simulate post-operative obstruction, though it is

rare, and usually occurs at or immediately following operation.

*Mesenteric Thrombosis or Embolism*.—The history or clinical findings of primary heart disease or primary abdominal disease, with marked pain, often muscular rigidity with an unusual restlessness may help one to decide on a diagnosis.

*Acute Pancreatitis*—presents a very similar symptomatology, but flatus usually is passed without difficulty; stools may be passed; the condition occurs more often in the stout middle aged patients with history suggestive of biliary calculi. The pain may be sharp and excruciating while the abdomen may be supple.

*Peritonitis*—in this condition vomiting is usually more active, pain is more severe, the Hippocratic facies, retracted abdomen, with rise in temperature and leucocytosis are valuable aids in diagnosis.

*Intussusception* is met with more often in children; a mass is usually evident, with the passage of mucus and even blood.

In general it may be said that the more severe the vomiting, and the earlier the onset, the higher the obstruction. If distention is severe, the colon is most likely involved. If distention is acute the probabilities favor volvulus. If distention is slight the obstruction may be in jejunum or duodenum. If the distention is more in the central portion of the abdomen, the ileum and cecum are more likely to be involved. Vomiting is likely to be more severe if the obstruction is due to bands or an internal hernia. Shock and collapse are more marked when the obstruction is high. Strangulation causes the most severe symptomatology. In case of doubt it is always a safe rule to operate.

#### PROGNOSIS

The prognosis in post-operative obstruction is always grave and depends entirely on the time at which operative correction takes place. There are few surgical conditions which call for earlier operation than post-operative mechanical obstruction. If a certain stage is passed, as we can understand from the pathology of the condition, the relief of the obstruction does not save life. Most of the authorities consulted give mortality in operations for the relief of obstruction from 50 per cent to 75 per cent.



In the November issue of the "Annals of Surgery", Edward C. Van Buren, Jr., presents a paper on acute mechanical ileus wherein he states that, with certain exceptions, if the case is one of really acute mechanical ileus—the longer the patient lives with this condition prior to operative procedure, the sooner he dies afterward. He further states that everyone knows this but almost everyone acts as if he had forgotten it when confronted with a case of obstruction occurring during the convalescence of a patient upon whom he had operated for some other condition. He has performed some interesting experiments on dogs in five of which on examination 48 hours after experimentation only one showed any gross pathology. In eight which were examined 72 hours after obstruction all showed gross lesions or damage. From his observations he concludes that the 72 hour period is a critical time and he urges early operation. He had a mortality of 25 per cent in cases operated early, before 48 hours; and a 75 per cent mortality after 72 hours had elapsed. He says further that on the basis of such evidence one feels justified in urging early operation, exploratory, if you like, in cases of suspected acute ileus without waiting for an absolute positive diagnosis.

#### TREATMENT

*Prophylaxis.*—The prophylaxis of obstruction is the most important. All abdominal cases should be carefully handled. The use of pierie acid preparation for the skin rather than iodine or if iodine is used, towels clamped on the skin edges and keeping gloved hands out of bichloride solution will help in preventing adhesions. The intestines should be handled as little as possible. Injury to abdominal wall by means of retractors should be avoided. All raw surfaces should be covered over with peritoneum. The closing of the abdomen should be done very carefully, the edges of the peritoneum being accurately opposed. The proper adjustment of the omentum over intestines and any other surface is of great value. One should try to place or replace the intestines as nearly as possible in their normal position. Some operators fill the abdominal cavity with normal saline after the operation, thus allowing the intestines to adjust themselves by floating around, and to thus pre-

vent obstruction, even though adhesions do form. The early evacuation of the bowels likewise tends to prevent obstruction. The value of pituitrin in these cases is not to be overlooked. In our Clinic we use 0.5 c. c. surgical pituitrin every six hours beginning about 4 hours after operation; especially is this done where adhesions have been encountered at operation. We believe we have seen good results following its use.

*Medical.*—Medical threatment is negligible except perhaps the intravenous or subdermal injection of normal saline, with the addition of adrenalin. The value of pituitrin is noticeable in prophylaxis.

*Surgical.*—After the diagnosis has once been no time should be lost in attempting to relieve obstruction. Personally, I do not believe that one should wait for the classical picture for a definite diagnosis; in fact, in the future I shall operate as soon as I feel fairly confident that obstruction exists. After operative correction is started it is well to at once go to the point of obstruction. It is a good plan to examine in a systematic manner the areas which were operated. For instance, the pelvis first; if the obstruction is not found here, look at the right iliac fossa near the cecum; if nothing is found here then go to the left side to the sigmoidal region. If, as is frequently the case, one finds loops of distended bowel one may hunt along the bowel until the collapsed portion is found which marks the point of obstruction. The adhesions should be carefully separated and the condition of the gut examined. Where the gut is at all gangrenous it is necessary to do one of two things: either to resect the bowel or to bring the gangrenous portion of the bowel out of the abdominal cavity making an artificial anus by suturing the bowel to the abdominal wound. This should not be done, however, until all the adhesions have been found and liberated. At times it may be necessary to empty the abdominal contents at once. This is especially true in cases with great distention even though the intestines be not gangrenous. The gut should be freely opened so as to allow the escape of the intestinal contents which are very toxic. A tube can then be placed within the lumen of the bowel and sewed into place; covering the tube with a portion of omentum is of great value. Tube drainage serves several

purposes: at first, it allows the decomposing poisonous contents of the bowel to escape; second, it relieves the disturbance to the circulation of the bowel; third, it allows the intestine to be replaced more easily into the abdominal cavity when the operation is finished; fourth, it alleviates the discomfort of the patient. As it is necessary to be careful in protecting the abdominal cavity from infection, the opening in the gut must be closed and left on the outside if need be. Puncturing of the bowel with a small aspirating needle is of no practical value.

#### CONCLUSIONS

1. Post-operative obstruction while less common than formerly occurs far too frequently and deserves serious consideration.
2. The outstanding etiological factors are adhesions.
3. The diagnosis and differential diagnosis is often difficult and requires close observation and study of each case individually.
4. The prognosis is dependent on early diagnosis and prompt surgical relief after diagnosis.
5. The most important part of treatment lies within the field of prophylaxis, the strict observance of fundamental principles as gentle handling of tissues, surgical cleanliness, exclusion of peritoneal irritants, unprotected gauze drains and the like.
6. Early surgical intervention with measures tending to support the adrenal system is the only salvation when post operative ileus presents itself.
7. When in doubt operate.

NOTE:—Since the presentation of this paper our attention has been called to the work of Louria, (*The Blood Urea Nitrogen in Acute Intestinal Obstruction*, *Arch. Int. Med.* 27: 620, May, 1921). Blood urea nitrogen of 45 mgms. or over in acute abdominal conditions, in absence of chronic kidney disease, strongly points to acute obstruction, acute peritonitis, or acute pancreatitis. One of our recent cases showed an increase to 66.5 mgms. blood urea nitrogen. We believe this test merits further study.



#### SPINAL CORD MANIFESTATIONS IN PERNICIOUS ANEMIA\*

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Notwithstanding the numerous references in the literature on this subject, it does not seem amiss to call attention to the fact that pernicious anemia is always to be considered when dealing with cord disorders, particularly the combined scleroses, for it happens not infrequently that cases of pernicious anemia with predominating nervous symptoms go unrecognized until the symptoms of anemia make their appearance.

In approximately seventy-five per cent of the cases of pernicious anemia, a careful physical examination will reveal some evidence of involvement of the central nervous system, and it is not uncommon to see patients in whom the spinal cord manifestations precede and overshadow the symptoms produced by the anemia. It is in these cases in which the nervous symptoms dominate the clinical picture that we are likely to err in our diagnosis.

Nonne was the first to describe the degenerative changes in the spinal cord in pernicious anemia. This observer found pathological changes in the cords of ten out of seventeen cases. Degeneration as a rule begins with the formation of small areas of sclerosis principally located in the white matter of the cord and in a majority of the cases the posterior half shows more involvement, giving rise to symptoms referable to the lateral and posterior tracts. However, in some cases the anterior portion of the cord may be involved. Ultimately these sclerotic plaques by confluence and further degeneration results in diffuse and extensive changes taking place in the white matter, to which the term of subacute combined sclerosis is given. It is the concensus of opinion that the pathologic changes found in the cord in pernicious anemia are due to a toxic process which reaches the cord by way of the vascular system, giving rise to hemorrhagic or interstitial changes resulting in a more or less marked sclerosis. The cause of this toxic process or the etiology of pernicious anemia is still unknown.

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A large percentage of the patients with pernicious anemia will give a history of paresthesia, described as tingling, numbness soreness, feeling of largeness and other abnormal sensations in the extremities, particularly the lower. Woltman in an analysis of 150 cases states that in 80 per cent, paresthesias were present regardless of whether or not involvement of the nervous system could be demonstrated objectively.

In the cases showing nervous symptoms but in which the symptoms of anemia predominate and precede those referable to the spinal cord, the diagnosis of pernicious anemia with cord changes as a rule is not difficult. Here we have more or less pronounced anemia with its associated symptoms such as general muscular weakness, lassitude, dyspnea on exertion, and gastro-intestinal disturbances to direct our attention to the necessity of having an accurate blood examination made.

The cases we are likely to have difficulty in diagnosing properly are (a) those in which the spinal symptoms appear early and overshadow those produced by the anemia, and (b) in the moderately advanced or advanced cases with progressive spinal symptoms during a remission of the disease in which the blood picture approaches normal. In Woltman's series approximately 13 per cent of the patients came for the express purpose of seeking relief from symptoms referable to the nervous system and of these symptoms the paresthesias were the most frequently encountered. If the paresthesias are of a more or less painful character, which is often the case in the early stages of the subacute combined degenerations, and on a casual physical examination no findings to account for them are elicited, these cases are likely to be carelessly diagnosed as "neuritis" or "muscular rheumatism."

Aside from the paresthesias, we also find patients with pronounced subjective and objective spinal symptoms. Cabot divides these cases roughly into two clinical groups: first, those having a spastic gait with increased reflexes and a greater or lesser degree of paralysis, and secondly, those having symptoms simulating tabes, with absent or diminished reflexes and a fairly marked ataxia. The latter group comprises the majority of the cases. Besides these two types,

there may be a combination of the two, in which a spastic ataxic condition is present, and occasionally a case in which the clinical picture is not unlike that of a multiple neuritis. To call attention to the difficulty in recognizing these conditions without careful and thorough study, it may be of interest to give the history and findings in three of the cases we have had under observation during the past year.

*Case I.* (5526-A) Miss K, age 55 school teacher. Entered the hospital April 22, 1920, complaining of great difficulty in walking due to stiffness and weakness in the lower extremities. She had no urinary symptoms and no gastro-intestinal disturbances except constipation. Family history negative. For 2 years she had been troubled with pain in both knees and legs. In September 1919 she began to notice stiffness in the knee joints and feet and about 3 months previous to entering the hospital began to have difficulty in walking. Patient had been under the care of physicians at various times for one year previous to her admission, but no blood examination was made except a Wassermann and this was found to be negative. Evidently lues was suspected in this case because of the gait disturbance.

**Physical Examination:** Fairly well preserved elderly female. The skin and mucous membranes were somewhat pale. Mentally she was sluggish and her memory was poor. Pupils were equal and reacted to light and accommodation. There was extreme muscular weakness of the lower extremities. The gait was spastic. Knee jerks were exaggerated. Patellar and ankle clonus were present on both sides. Propathic and epicritic sensibilities were diminished over both lower extremities. Blood pressure: systolic, 140; diastolic, 65. Routine urinalysis was negative except for trace of albumen. Blood examination: Hemoglobin 68 per cent; R. B. C. 2,850,000; Color Index 1.2; Leukocytes 6,400; Pn. 50 per cent; Small lymph. 31 per cent; Large lymph. 16 per cent; Basophiles 1 per cent; Eosinophiles 2 per cent. A few megaloblasts and microcytes were found and poikilocytosis was quite marked. Blood and spinal Wassermann tests were both negative. There was a rather rapid and progressive development of paralysis of the lower extremities in this case, and control of the bladder was lost about 15 days after her admission to the hospital. Patient left the hospital on May 10th, 1920, and died at her home six weeks later.

*Case II.* (224-A) J. A. age 54, farmer. Referred by Mayo Clinic in April 1920, with diagnosis of pernicious anemia with early cord changes. The patient states that he first noticed numbness and weakness in the lower extremities in May 1917. Over a period of 3 years he had consulted a number of physicians and had taken baths for rheumatism at several health resorts. His chief complaint and the one which had proved quite annoying for one year previous to com-

ing under our care, was a soreness over the weight-bearing surfaces of both feet. He also stated that he had a "feeling of largeness" in both legs. There were no gastro-intestinal symptoms except constipation. Personal history was negative except that he had had nasal trouble for years. Patient was fairly well developed and nourished. Skin and mucous membranes were slightly anemic and there were eczematous lesions over the dorsum of both hands and over the lower half of both legs. Eyes: Pupils were miotic but regular in outline and reacted sluggishly to light and accommodation. Nose: Polypoid degeneration of right middle turbinate and polyps in left nares.

Knee jerks and Achilles reflexes diminished but equal. Questionable Babinski left side. Diminished

tactile pain and thermal sensations over both lower extremities. Joint sense also impaired. No paralysis or muscular weakness noted but gait suggested a slight ataxia present. Blood and spinal fluid Wassermanns were both negative. Fractional gastric test meal showed an absence of free hydrochloric acid. Blood examination—as shown in accompanying table.

Clinical course: With the administration of Blands with arsenic and dilute hydrochloric acid, the patient did very well until the latter part of August 1920 when he began to complain of difficulty in walking and with cold sensations over lower abdomen and thighs. These symptoms, especially the former, gradually became more pronounced, although the blood picture showed a gradual improvement.

Table I

Case 2—J. A.													
		Hemo- globin.	Erythro- cytes.	Color Index.	Leuco- cytes.	Pn.	Small Lymph.	Large Lymph.	Basophil.	Eosino- phil.	Polkilo- cytosis.	Ancliso- cytosis.	Normo- blasts.
April 26, 1920.....	70%	3,120,000	1.1+	6,200	72	25	..	..	0	0	+	+	0
June 26, 1920.....	80%	3,168,000	1.2—	....	..	..	..	..	..	..	slight	0	0
Aug. 13, 1920.....	80-85%	3,848,000	1. +	....	..	..	..	..	..	..	slight	slight	0
Sept. 2, 1920.....	80%	4,112,000	1.	7,200	45	41	6	6	2	+	+	+	0
Sept. 20, 1920.....	80%	4,336,000	1.1+	....	..	..	..	..	..	..	slight	0	0
Oct. 15, 1920.....	85%	4,272,000	1.	12,600	50	47	2	0	1	1	+	0	0

On our last examination of the patient October 18, 1920, the gait was that of a typical tabetic. The knee jerks were very feeble. Romberg was present. Sensory findings were practically the same as elicited on the first examination. A recent letter from the patient states that there has been no change in his condition since last October.

Case III. (23375-A) H. O., age 33, farmer, was admitted to the hospital April 27, 1920, with history of progressive general weakness of one year's duration and with loss of 40 pounds in weight. He also com-

plained of numbness in hands and feet and constant chilly sensations over the body. Occasionally he was troubled with an annoying unproductive cough.

Examination revealed a very anemic and undernourished individual. Lungs were clear, and cardiac findings were negative except for a soft systolic murmur at the apex. No definite neurological changes were noted. Blood and spinal fluid Wassermann reactions negative. Free hydrochloric acid was absent in gastric test meal. Urinalysis was negative. The blood findings made the diagnosis of pernicious anemia an easy matter.

Table II

Case 3—H.O.													
		Hemo- globin.	Erythro- cytes.	Color Index.	Leuco- cytes.	Pn.	Small Lymph.	Large Lymph.	Basophil.	Eosino- phil.	Polkilo- cytosis.	Aneliso- cytosis.	Normo- blasts.
Apr.	28, 1920.....	50%	1,888,000	1.3—	2,400	44	50	2	2	2	+	+	few
May	6, 1920.....	55%	1,904,000	1.4+	2,400	..	..	..	..	..	+	+	0
May	13, 1920.....	55%	1,936,000	1.4+	....	..	..	..	..	..	+	+	0
June	16, 1920.....	65%	3,032,000	1. +	4,000	60	36	2	0	2	+	+	0
Mar.	17, 1921.....	60%	2,428,000	1.2+	6,400	60	37	3	0	0	+	+	few

Clinical course: Under the administration of iron and arsenic there was a gradual increase in the hemoglobin and in the number of erythrocytes. Patient left the hospital on May 20, 1920, feeling much better and gaining in weight. One month later he began to have trouble in walking. Physical findings at the second examination in June 1920 were as follows: The color of the skin and mucous membranes had improved since leaving the hospital and there was a gain of 15 pounds in weight. The patellar and tendo

Achilles reflexes were increased. Planter reflexes were apparently normal. There were no definite sensory changes noted. Unfortunately the tuning fork test for vibration sense was not carried out. Co-ordination of upper and lower extremities was noticeably impaired.

The patient returned on March 17, 1921, for the relief of anal fissures. The physical findings were practically the same as on the previous examination with the following exceptions: Tactile pain and ther-



mal sensations were markedly diminished over palmar surfaces and stereognostic sense was lost. Propathic and epicritic sensations were not impaired over lower extremities but vibration sense as well as joint sense was absent. No pallesthesia elicited over upper extremities. The ataxia was more pronounced than on the previous examination.

In the first two cases (Miss J. K. and J. A.), it is of interest to note that the nervous symptoms appeared early and dominated the clinical picture and that pernicious anemia was not recognized in the first patient until two months before death, and in Case II not until three years had elapsed after the paresthesias were first noted.

It is conceded that the early recognition of these cases has but very little influence in prolonging the patient's life and while symptoms attributable to spinal cord involvement give us practically no prognostic assistance, it is nevertheless very important that these cases be diagnosed early and the patient informed of the true condition that exists.

Formerly it was supposed that symptoms traceable to cord changes were due to the severity of the anemia. It has since been observed that cord lesions in pernicious anemia do not always occur in the patients showing the greatest blood destruction, in fact the cord manifestations are quite independent of remissions and relapses. This is well shown in Cases II and III (J. A. and H. O.). These two patients developed striking subjective and objective nervous symptoms over a period of two months and during this time there was a gradual improvement in the blood picture. (See Tables).

There is usually very little difficulty in making the diagnosis in the combined scleroses due to this disease when once pernicious anemia is considered. However, the early cases in which very little blood destruction has taken place and in the moderately advanced cases at the height of a remission may at first prove quite puzzling.

Now it does not follow that a blood film examination is all that is necessary to diagnose pernicious anemia, on the contrary these patients require a thorough study which should consist of the following:

1. A detailed history.
2. A complete physical examination which includes pelvic examination in female and rectal examination in males.

3. A complete blood examination which includes the study of a blood smear, blood-platelet count and a Wassermann.

4. A thorough neurological examination.

5. Determination of bile pigments in the duodenal contents.

6. Fractional gastric test meal.

7. Examination of the urine and feces.

In the neurological examination particular attention should be paid to carrying out the sensory tests, especially for vibration and joint senses. Woltman in his series of 121 cases reports that epicritic and propathic sensibilities, i. e., tactile pain and thermal sensations were diminished in 42.2 per cent and joint and vibration sense impaired in 92 per cent.

Approximately one-third of the cases of combined sclerosis are due to pernicious anemia, so it is well to remember in the differential diagnosis that subacute degenerations of the cord may also be due to lues, arteriosclerosis, tuberculosis, diabetes, nephritis, leukemia, severe secondary anemias, carcinoma and poisoning from arsenic, lead or phosphorous.

The treatment in these cases consists of carrying out the usual general measures followed in pernicious anemia, with carefully regulated massages and hot baths indicated for the relief of the annoying nervous symptoms.

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# RECENT PROGRESS IN THE DIAGNOSIS AND TREATMENT OF CONGENITAL SYPHILIS IN INFANTS AND CHILDREN\*

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Syphilis offers a greater menace to the citizenry of this country today than any other disease. Syphilis among all classes is much more common than is generally supposed. More than two thirds of all those who have the disease, either acquired or inherited, have it from no fault of their own.

Jeans, of the Washington Medical School, St. Louis, who has made a careful study from personal observation as well as a very complete resume of the literature, estimates that in the poorer classes from 10 to 20 percent of all adult males and 10 per cent of married women are syphilitic. He also concludes that from 5 to 6 per cent of the living infants of the poorer classes in this country have syphilis. From a compilation of the reports of numerous authors Jeans draws the following conclusions:

(1.) In syphilitic families 30 per cent of all pregnancies terminate in the death of the child before term.

(2.) Probably 25 to 30 per cent of clinically syphilitic infants die as the result of syphilis.

(3.) Only about 17 per cent of all pregnancies in syphilitic families result in living non-syphilitic children, who survive the period of infancy.

What of the syphilitic children who survive?

Higgins found 42 per cent of 50 mentally defective children to have positive Wassermann reactions. Gordon found 50 per cent of seventy-five cases, Fraser found 45 per cent of ninety-nine cases, Watson found 60 per cent of 204 cases. Jeans\* found 48 per cent of twenty-five cases. Green† in a study of one hundred syphilitic children found fifty-two to have pathologic eye ground lesions.

Physical defects of all kind are extremely

common but time will not permit even a brief mention of these at this time.

What can be done to prevent women giving birth to syphilitic children? I answer: everything.

It lies within the power of the State in co-operation with the medical profession and the public by practical measures to entirely prevent inherited syphilis. How?

If Wassermann reactions were demanded of every man and woman before marriage, and a license refused to all who react persistently positive; and if Wassermann reactions were made by physicians as a routine on all pregnant women, just as an examination is made, and anti-syphilitic treatment given during the period of pregnancy to all those who react positive, congenital syphilis would soon be extremely rare. Treatment for parents and infants should be maintained until they persistently react negatively.

What are the difficulties which present themselves as things are today for the average physician?

Physical signs being frequently absent in the syphilitic mother, the diagnosis except by means of the Wassermann, or one of its modifications, is frequently difficult.

The history of one or more miscarriages should be sufficient to warrant a Wassermann being taken from both parents. A positive diagnosis of syphilis should not be made from one Wassermann. After several miscarriages it not infrequently happens that a baby is born that is apparently normal at birth especially if the mother were infected a considerable time previously. Infants born of syphilitic parents may or may not show the typical evidences of syphilis at birth. If they do not show these signs at birth, they are almost sure to show some of them within the first six weeks. These signs are: first, snuffles with a thin rather colorless discharge from the nose, and some excoriation of the skin at the junction with the mucous membrane at the margin of the nares; second, irregular blotches in the skin appearing usually on the soles of the feet and palms of the hands and sometimes over the entire body; third, the rhagaden, a peculiar pleating around

\*Jean's review *Am. Jour. Dis. Ch.* July, 1920.

†Green's review *Am. Jour. Dis. Ch.*, July, 1920.

\*Presented before the Southern Minnesota Medical Association, Mankato, Minn., November, 1920.

mouth and anus; fourth, a typical senile appearance of the face.

The Wassermann may be negative during the first week in a syphilitic infant; any or all of the above signs are sufficient to indicate a Wassermann of the parents. In older children the Hutchinson teeth are suggestive but not wholly pathognomonic.

Keratitis should always suggest syphilis and should be followed by a Wassermann. Involvement of the central nervous system such as hydrocephalus should not only have a Wassermann but a lumbar puncture, the fluid being subjected to the colloidal gold test and the Wassermann.

All these tests are made now free of charge at the State Board of Health Laboratory, receptacles and cartons for transport through the mails being furnished. Reports are prompt and dependable.

*Treatment:*—The drugs chiefly employed in the treatment of syphilis are: mercury (or one of its salts) and arsphenamin or one of its allied products. Arsphenamin or salvarsan and neo-arsphenamin or neo-salvarsan are the two arsenical preparations in use. It is generally conceded that although salvarsan is much more active therapeutically than neo-salvarsan, that salvarsan is two or three times more toxic than neo-salvarsan.

In the treatment of congenital syphilis in infants, the arsenical preparation must be used with great caution. Villarago recommends in infants the subcutaneous injection of one centigram per kilogram in 5 c.c. of serum every 15 days for 3 doses. Lesage calls attention to the necessity of beginning with small doses in infancy and says we should begin with milligrams rather than centigrams. It was demonstrated some years ago that where the mother was having salvarsan the infant received considerable of the drug through the milk supply and showed marked improvement of the symptoms.

It is in mercury and its salts to which we still cling in the long continued treatment of congenital syphilis in infants and children. The treatment of syphilis with mercury is still a haphazard affair, the quantity and frequency of the dose being determined by keeping within the tolerance to the extent that the child

does not suffer from salivation or a too severe diarrhea.

Until 1918\* there were no tests delicate enough by which the quantitative estimate of the mercury either in the blood or urine could be measured. As late as 1917 there was still doubt in the minds of investigators whether mercury was directly absorbed into the circulation or whether it gained entrance to the blood stream *only by being volatilized and inhaled*.

Wile and Elliott, by employing a modification of the *Reinsch method*, were able to detect small amounts of mercury in the urine and by this method demonstrate that the absorption of mercury was both by inunction through the skin and by volatilization.

In 1918 Ramsey and Ziegler made some experiments, the report of which was published in the *American Journal of the Diseases of Children*, November, 1918.

From this series of experiments the following conclusions were drawn:

(1.) In infants and children, mercury, when given by the mouth, by inunction or intramuscularly, is excreted at least partially by the urine.

(2.) In new-born infants and older children mercurial ointment when placed in contact with the skin, without any friction being used (protected and sealed by wax paper from being volatilized and inhaled), is taken up by the skin and excreted in the urine and continues to be excreted in the urine for a variable time after all treatment has been discontinued.

(3.) By inunction (with rubbing) mercury is readily taken up by the skin and eliminated in the urine and continues to be eliminated for a considerable time.

(4.) When one inunction is given, the maximum daily amount of mercury is usually eliminated during the following twenty-four hours, smaller amounts being eliminated for a variable time.

In a new series of experiments we have sought to determine with some degree of accuracy the amount and rapidity of absorption of the mercurial preparations in use as de-

\*The quantitative analysis referred to in this paper will be found in an article by Ramsey and Graebner. (*Journal of Diseases of Children*, September, 1920.)

terminated by quantitative estimate of the amounts eliminated in the urine. The method was the same as that employed in the previous experiments.

It was observed that when 50 per cent ointment was used, the elimination began soon after administration, the maximum elimination occurring during the following three days, the elimination being fairly complete within five days. When double the amount, 2 gm. of the 50 per cent ointment, was used as inunction, the amounts eliminated were relatively larger.

With the 35 1/3 per cent mercurial ointment, even when double the quantity was used, the elimination did not begin in appreciable amounts until the second day after inunction, and then in much less quantities than when the 50 per cent ointment was given. When the mercurial ointment was simply used by smearing on the skin, without rubbing, the amount eliminated was much less than when used as an inunction.

In the case of calomel ointment, it was found that the elimination was delayed, and the total quantity eliminated was much less than with the mercurial ointment, although two grams were used for each inunction.

With the mercurial salicylate in oil, used hypodermically, it was found that the maximum elimination is in the first twenty-four hours, smaller quantities continuing to be eliminated for six or seven days.

The mercuric chloride solutions used hypodermically continued to be eliminated in amounts not sufficient to be measured for six or seven days. In one case there was an appreciable amount of protein in the urine following its use, a point which we also observed in our previous experiments.

Calomel given by mouth (1 grain) either in one dose or divided doses, was eliminated in appreciable amounts although not sufficient to be measured for six or seven days.

Gray powder, although given in large doses, was eliminated to a very small extent and for a short period of time.

The practical deductions which may be drawn from this series of experiments are, therefore, as follows:

1. Mercurial ointment, 50 per cent, is to be

preferred to the less concentrated forms and need not be repeated more often than twice weekly instead of daily. The quantity of mercury absorbed is much increased by friction.

2. Calomel ointment is absorbed, but less rapidly and to a less extent than the mercurial ointment and should, therefore, be given in greater concentration.

3. The salicylate of mercury in oil should be given hypodermically twice weekly instead of once.

4. The mercuric chloride, by hypodermic injections, although the dose is very small, continues to be eliminated for six or seven days. The fact, however, that its use frequently is followed by the appearance of protein in the urine should exclude it from the treatment of syphilis in children.

5. Calomel by the mouth is readily absorbed, and continues to be eliminated for a considerable time so that it is probable that it would be sufficient to give it at intervals of several days, thus avoiding diarrhea.

6. Gray powder is absorbed to a small degree and eliminated rather rapidly so that large doses repeated daily would probably be necessary to maintain mercury in the circulation.

We shall continue our experiments and determine, if possible, whether the clinical results will bear out the observations made in these experiments. In one case (M. S.) of congenital syphilis, with marked keratitis, treated by inunctions of 50 per cent mercurial ointment, once weekly, the clinical progress was apparently quite as satisfactory as in cases where daily inunctions were given.

#### DISCUSSION

DR. ROY N. ANDREWS, Mankato: I would like to add a few words to Dr. Ramsey's excellent paper in regard to the diagnosis of syphilis immediately after birth. It is important to the physician, as well as to the patient, to diagnose syphilis early in both the mother and in the child. The diagnosis in the mother is a little more difficult, but by obtaining a careful history, particularly of the pregnancies and miscarriages, your suspicions can, at least, be aroused. Fortunately, we have the Wassermann test at our disposal and this should be taken routinely. One may find by careful examination some evidences of syphilis in the mother, but more often the blood test is the only way a diag-



nosis can be made. One should not be satisfied with this alone, but should examine the spinal fluid as well in cases where doubt may arise.

The diagnosis in the infant is not so difficult. Babies with a congenital syphilis are undersized and of a feeble vitality. Syphilitic infants have a tendency to show moderate irregular elevations of temperature. Sooner or later, they develop a more or less marked degree of secondary anemia. Furthermore, these infants have a tendency to gastric, intestinal and nutritional disturbances and to infections of the respiratory tract.

Characteristic signs of congenital syphilis develop soon after birth. If an infant reaches three months without any signs, the probability is that it is not syphilitic. There are three important signs of syphilis, which may be present at birth. First, snuffles; second, vesicular eruption on the hands and feet; and third, enlargement of the spleen. These signs are not present in every case and indeed are absent in the majority of cases. They deserve special attention because they are the only important clinical signs which can be seen in the new born. If present, it may mean that the infection took place early in fetal life. The so-called snuffles represent a cellular infiltration of the nasal mucous membrane, causing the passage to be narrowed or stopped up, thus resulting in a persistent snuffling sound.

The eruption of vesicles upon the hands and feet is the so-called syphilitic pemphigus or pemphigus neonatorum. The appearance is that of round vesicles which vary in size from a small pea to a cherry upon an inflamed base. They are at first serous, but later become cloudy and purulent.

The localization of the lesions upon the palms of the hands and soles of the feet (on the plantar surface of the fingers and toes) is wholly characteristic. When present, it usually appears at birth. It is always an early sign and very seldom appears later than the third or fourth week. Enlargement of the spleen when seen in the new born is an almost pathognomonic sign of syphilis, and indeed is the only sign of visceral syphilis which can be detected. Even when not present at birth, it is almost certain to appear at some later period, if only for a short time, so that it may be said to be an almost constant sign of the disease. It may not be present at the time of examination, but found at some other time, so that its absence does not mean a negative diagnosis.

The effects of syphilis osteochondritis may sometimes be visible at birth. It is manifested as a pseudo-paralysis which is difficult to distinguish from obstetrical paralysis. Iritis is an occasional manifestation of syphilis in the new born, and when present, is practically pathognomonic. Syphilitic disease of the nervous system, of the organs of special sense (except iritis) and cutaneous manifestations which are so markedly constant and

characteristic in the later stage of the disease are never seen in the newborn.

New born syphilitic infants, even at full term, are usually under weight, below size and their vitality is below par. Premature births are not uncommon.

We must remember that fontanelle and lumbar punctures make serological diagnosis as easily available in the case of the child as in the adult. We should like to see the day when blood from the umbilical cord is routinely subjected to a Wassermann test.

DR. LIDA OSBORN, Mankato: The importance of this subject is shown by the frequency of occurrence of this condition. As congenital syphilis is of such frequent occurrence, it means a very large percentage in the death rate among the unborn and newborn children. Seventeen per cent of the pregnancies in syphilitic families result in living children. Of the living children in syphilitic families, 75 per cent are syphilitic. Even though the early signs of syphilis may disappear without treatment, usually, a few years later, the signs will reappear, and these children will give all the evidences of the disease without further tests. Of course, in many cases we depend very largely upon the Wassermann test, which is usually positive. However, there are other tests, which have been tried out. As to the luetin test, its only value has proved to be in some of the late obscure cases where the Wassermann is negative. If you have a positive test you can depend upon it, but if it is negative it means nothing. A number of coagulation tests have been tried, but at the present time these have not been found practical. There is one test that has been worked out which is supposed to be very dependable, and that is the Sachs-Georgi. This test is simpler in performance, but the objection to it is that it needs from thirty-six to forty-eight hours to get the results.

In the treatment of syphilis we have to depend very largely upon mercury by inunction, and Dr. Ramsey has done a great deal to help us put the treatment upon the basis upon which we can depend. Objection to that treatment has been the inaccuracy of the dose because we do not know the amount of absorption, and it may be uncertain. Some authorities at the present time are using neosalvarsan by injection into the frontal sinus in some instances, but there is great danger attached to this method, and it has not proven practical in the hands of the average practitioner. The work Dr. Ramsey has done in the last year or so will help up to feel that we should get results and we ought to know more about the quantity of drugs absorbed and the results we may expect from its use.

DR. HENRY L. ULRICH, Minneapolis: While I have listened with great interest to the paper of Dr. Ramsey, and while he has spoken about the rate of absorption of drugs and the elimination of mercury, he has not told us about the value of these

various drugs in connection with the clinical results of his treatment, and I would like to ask him to touch on that in his closing remarks.

DR. RAMSEY, St. Paul (closing the discussion): I am very glad to have these points brought out because I simply could not cover them in the short time at my disposal, and it was my hope that they would be brought out in the discussion.

One point I wanted to make particularly was that congenital syphilis is very easy to diagnose in very typical cases, but a large number of cases are not typical and show nothing in the way of any sign, except one like snuffles, or vesicles on the palms of the hands. Many times they have blotches which can only be seen by making pressure, or a pleated condition around the mouth or anus or both. These should warrant a Wassermann test being taken.

With reference to the Wassermann tests, we find a great deal of difficulty in the mind of the average practitioner about the question of taking Wassermann. It is a simple thing. We take them every day in our office. All you need to do is to prick the finger and obtain two c. c. of blood, which is easily gotten, the laboratory of the State Board of Health furnishes containers and give very prompt reports, very often the very next day, so that there is no excuse for not making Wassermanns.

I want to point out again that in very young individuals a Wassermann sometimes is not positive for the first week, so that if there are any symptoms at all manifested by the child that are suspicious, you ought to take Wassermanns from the parents themselves. The fact of one of two miscarriages in the mother, although she shows nothing, should warrant you in making a Wassermann.

As to the trouble that is anticipated with the family, I find it is largely a question of education, and our State Board of Health and laboratories in the country are doing a great deal to dissipate that. When these Wassermanns show positive, they send literature to the people telling them that it is a contagious disease and what it means to them in the future. We find the whole family, father, mother and children, want Wassermanns taken.

In reference to the value of the different drugs concerning which Dr. Ulrich asked, I may say that we have not gone sufficiently far. We started out to demonstrate one thing, and we have demonstrated something we think very definite, but I can simply say this as far as we have gone with the small number of cases, giving mercury ointment in these cases, not to exceed twice a week, we have had remarkable results, seemingly as good, if not better than we have ever had before.



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## EDITORIAL

### THE ANNUAL STATE MEDICAL MEETING

The meeting of the association in Duluth was on the whole a great success, as all who attended will agree. The local members of the profession lived up to their reputation as entertainers and made every one feel at home. The two themes of the convention, emphasized by both the retiring president, Dr. C. E. Riggs, and the newly elected president, Dr. J. Frank Corbett, were, first, the necessity of a change in the attitude of the Association regarding the so-called cults in the practice of the healing art and the undesirability of socialized medicine.

Our distinguished visitor, Dr. Joseph C. Bloodgood, of Baltimore, assured us we had little to fear along these lines if we, as regular practitioners, showed results. He laid emphasis on the responsibility of the profession for the education of the public in medical matters and forcibly made his point felt by the statement that every appendix requiring drainage was the fault of the profession through its failure in its education medically of that particular locality in which the patient lived. Dr. Bloodgood's ideas of the value of the physician and surgeon from a therapeutic standpoint appeared to some of his hearers as very pessimistic, and was probably due, in part, to his large experience with the cancer problem. He was not far from right, however, and he did well to call attention to the greater importance of preventive medicine as compared with therapeutics.

The attendance at the meeting was regrettably small, the register showing 306. While the number

attending the annual meeting when it is held outside of the Twin Cities is usually smaller, August seems to be a rather inconvenient time for many members as it interferes with summer vacations.

The program as a whole proved interesting. The large majority of papers were read by men from the cities and this will probably ever be the case. It is the specialist who as a rule is in position to present valuable work in his particular sphere, and he is located in the city. The general practitioners from the rural district, however, often have valuable information to impart to their city brethren, and it is to be hoped that they will be better represented at future meetings.

The following officers were elected for the year 1922:

J. Frank Corbett, M. D., Minneapolis.....	President
S. H. Boyer, M. D., Duluth.....	1st Vice President
A. W. Ide, M. D., Brainerd.....	2nd Vice President
John Williams, M. D., Lake Crystal.....	3rd Vice President
Carl B. Drake, M. D., St. Paul.....	Secretary
F. L. Beckley, M. D., St. Paul.....	Treasurer
Dr. C. E. Dampier, Dr. R. J. Hill and Dr. F. A. Dodge were re-elected councilors from their respective districts.	

Minneapolis was chosen for the next annual meeting which will be held the second week in October, 1922.

### OUTLYING HOSPITALS AS CENTERS FOR CONTINUATION COURSES FOR PRACTITIONERS

The very thoughtful article in this number by Dr. John M. Dodson, should stimulate outlying hospitals in the state of Minnesota to consider the adaptation of their facilities and personnel to the provision of opportunities for study by general practitioners who wish to brush up in laboratory work, diagnosis, and emergency surgery. Dr. Dodson has outlined very clearly in considerable detail the sort of work in each of these three departments, which he thinks the honest, progressive, general practitioner who wishes to remain in general practice would find it worth while to do in brief periods of intensive study. The work as outlined, for the most part, is just such work as might readily be supplied by any good hospital with an organized staff and proper laboratory and clinical facilities. The work should be stimulating to the staff as well as to the student practitioner. Teaching, like mercy, "blesseth him that gives, as well as him that takes."

As Dr. Dodson has pointed out, it is not alone

in those hospitals connected with medical schools in which such instructions might be efficiently given. Besides the unused teaching material which, no doubt, may still be found in the Twin Cities, there can be no question but that in both charity and pay-patient hospitals in other cities of Minnesota, as for example, in Duluth and Mankato, there also exists unused clinical and laboratory material which might be utilized most profitably for study by general practitioners of the state who are able to give only short periods to review work.

The success of the short courses given at the University Medical School this summer, the large attendance, and the general satisfaction expressed by the graduate men, all attest the growing demand for this sort of work in the northwest. It needs only a bit of clear headed organization to make more potential facilities available for the large number of men who would gladly use them.

L. B. W.

### UNIVERSITY SHORT COURSES

The May short course at the University Medical School is a recognition of the existence of the general practitioner and his needs.

In his endeavor to keep up with medical progress the general practitioner buys books, subscribes to magazines, attends society meetings, and takes in clinics and city "weeks" but still finds himself rather overwhelmed by the constantly increasing supply of new pabulum, the nutritional value of which he is often unable to assess.

The medical man, however, many years out of college, will not consider fundamental courses. Even the would-be specialist scarcely takes the time to study afresh the substructure of his restricted field. Courses to meet with the approval of the general practitioner must be strictly "practical." His grounding in medicine must be taken for granted.

The May short course at the State Medical School of four weeks was an attempt to meet this need. Some 32 men ventured in from three or four states, men whose years of graduation dated from 1893 to 1908. A numerous corps of instructors and specialists kept the men busy from 8 A. M. to 5 P. M. and later. A detailed program for each day in Medicine, Pediatrics,

Surgery, and Obstetrics and Gynecology enabled the men to fill the day as they wished, for, while a man signed, as a rule, for a particular course it was not necessary for him to confine himself to one subject. Before the men left each was asked to make suggestions looking to an improvement in future courses.

It is to be hoped that the University will duplicate this Short Course next May and that the general practitioners of the tributary territory will respond to this endeavor in larger numbers so that the interest of the instructors may be kept up to a practical pitch.

H. B. A.

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### STATE MEDICAL SOCIETY OF WISCONSIN

The State Medical Society of Wisconsin celebrated its seventy-fifth birthday by holding a "Home-Coming" meeting in Milwaukee, September 7, 8 and 9, 1921. All former Wisconsin men, whether they have practiced there or left Wisconsin to study medicine, practicing elsewhere after graduating, were invited to this home-coming.

The officers of the society are anxious to secure at this time for mailing purposes the names of all former Wisconsin men. They will confer a favor by sending their names and addresses to Dr. Rock Sleyster, Secretary, Wauwatosa, Wisconsin.

## NEWS OF THE HOSPITALS

Dr. Theodore Bratrud, of Warren, who is to be chief surgeon at the new Memorial Hospital at Hallock, visited that city recently to consult with Drs. Shaleen & Overend and at the same time look over the new hospital.

Miss Schroeder, superintendent of nurses at St. John's Hospital, St. Paul, has returned from her vacation.

Drs. Plondke and Birnberg, members of the staff at St. John's Hospital, have returned from Duluth, where they read papers before the Minnesota State Medical Association.





## OF GENERAL INTEREST

A baby girl was born August 14th to Dr. and Mrs. J. R. Sturre, of Watkins, Minnesota.

Dr. O. E. Bratrud, of Warren, is in Chicago where he is taking a few weeks postgraduate course.

Dr. J. A. Roy, of Stephen, Minnesota, has sold his practice to Dr. W. P. Baldwin, of Fargo, N. D.

Dr. P. M. Fischer, of Shakopee, is recuperating from a recent operation for acute appendicitis.

Dr. R. J. Hodapp, of Madelia, has become associated with the Willmar Clinic at Willmar, Minnesota.

Dr. A. E. Barclay, well known roentgenologist of Manchester, England, recently visited the Mayo Clinic.

Dr. O. S. Werner, of Lindstrom, has located in South Haven, Minn., where he has purchased a small hospital.

Dr. F. U. Davis, of Faribault, has been appointed local surgeon on the Minneapolis, Northfield and Southern railroad.

Dr. C. P. Robbins, of Winona, has returned from Philadelphia where he has been taking a six weeks special course in medicine.

Dr. Baldwin, of Casselton, N. D., has recently located at Stephen, Minn., succeeding Dr. J. A. Roy who has removed to Argyle.

Dr. James Hayes, recently a Fellow in Surgery in the Mayo Foundation, has opened offices in the La Salle Building in Minneapolis.

Dr. Harry Rowe, of St. James, is in New York City where he is taking a postgraduate course at the Herman Knapp Memorial Eye Hospital.

Dr. M. C. Bergheim, formerly of Raymond, has recently located at Hawley, where he will continue in the practice of medicine and surgery.

Dr. W. J. Mayo spent the early part of July visiting institutions throughout the state which are under the direction of the University of Minnesota.

Dr. DeWitt Garlock, of Los Angeles, has joined his brother, Dr. A. V. Garlock, of Bemidji. The firm will specialize in diseases of the eye, ear, throat and nose.

Dr. E. W. Buckley, of St. Paul, was elected Supreme Physician by the Knights of Columbus at the annual international convention held in San Francisco in August.

Dr. F. J. Brabec, of Perham, has taken Dr. H. M. Juergens, of Missoula, Montana, into partnership. Dr. Juergens is a graduate of the University of Minnesota Medical School.

Dr. F. W. Calhoun, of Albert Lea, has recently returned from Europe where he has been the past two months visiting the battlefields and cities of France and England.

Dr. L. B. Derdiger, of Battle Lake, attended the A. M. A. meeting in Boston this summer, after which he visited various places of interest in New England before returning to his home.

Dr. J. S. Collins, of Caledonia, has moved to Wabasha, where he has opened offices. Dr. Collins has spent considerable time in postgraduate work in various schools the past year or so.

The firm of Drs. Verne and Thornby, of Moorhead, has been recently dissolved, Dr. Verne having gone to California where he will make his future home. Dr. Thornby will continue in practice at Moorhead.

Dr. H. Longstreet Taylor, of St. Paul, is abroad for the summer months. He attended the International Congress of Tuberculosis in London the latter part of July, and will return this fall after touring the continent.

Dr. S. A. Slater, superintendent of the Southwestern Minnesota Sanatorium of Worthington, was chosen as state president of the Minnesota Tuberculosis Association at a meeting held recently at Sauk Center.

Dr. Everett K. Geer, of St. Paul, has returned from Saranac Lake, New York, where he studied at the Trudeau School of Tuberculosis. Dr. Geer has recently received an appointment as Instructor in Medicine from the University of Minnesota Medical School.

Dr. Mann and Dr. Magath, of the Mayo Foundation, have returned from Fairport, Iowa, where they spent three weeks as guests of the United States Bureau of Fisheries doing experimental work on the function of the liver with a view to determining whether or not fishes can be used for experimental purposes.

Dr. E. E. Hall, of Little Falls, received considerable notoriety in the newspaper world because of a warrant issued by the Federal officials against him charging violation of the Volstead prohibition act. We take pleasure in giving publicity to the fact that after considerable delay in starting proceedings a speedy dismissal of the charges was reached.

Dr. E. C. Yao, of Shanghai, and Dr. K. H. Li, of Soochow, who are on their way home after spending seven years in this country in the study of medicine and surgery, passed through St. Paul recently, arriving here from Rochester where they spent several days attending clinics at the Mayo hospital. They were very much interested in this country from a general standpoint, and speak exceptionally good English. Dr. Li is a graduate of Tsinghua College of Medicine in Peking, and came here seven years ago to attend the University of Pennsylvania, being especially interested in diseases of children. He will return to his native Soochow and devote his time to child welfare work from a medical standpoint. Dr. Yao, who is a native of Shanghai, also attended the University of Pennsylvania, and returns to his country to specialize in surgical work. They sailed Au-

gust 18th on the Empress of Asia, which also carried John D. Rockefeller, Jr., Dr. William Mayo, and several other prominent medical and scientific men who will attend the dedication of the Peking Union Medical College under the auspices of the China Medical conference which will be held at Peking about the middle of September.

As the result of a conference of representatives of the Public Health Service, the Red Cross and the Legion, a widespread publicity campaign is being undertaken by these agencies in an effort to get in touch with discharged soldiers who have not received proper compensation for disability incurred in war service. Strange to say, in spite of the publicity already given the activities of the government in caring for disabled soldiers it is felt in various quarters that some have been neglected. The headquarters of these activities for the portion of the Northwest in which Minnesota lies, are located in Minneapolis at the Plaza Hotel, and applicants should communicate with the War Risk Bureau or Bureau of Vocational Training at this address.

One of the laboratories in St. Paul has made a departure from their ordinary line of activities and will give a three months course to young women with certain preliminary qualifications in general laboratory work. The course begins October first and will consist of practical laboratory work, lectures, recitations, demonstrations and collateral reading. Lectures and classroom work will cover general bacteriology, rudiments of chemistry and physiology, interpretation of laboratory reports, the care and handling of patients, the preparation of patients for physical examination, the preparation of case histories, maintenance of office records, secretarial work and the handling of commercial accounts. This course is intended primarily to train office assistants for the medical profession.

The Minnesota State Board of Health reports: "Since the middle of April, centered about Sebeka, Wadena Co., and extending into surrounding counties, there has occurred an unusual outbreak of disease in which early cases were so mild that medical attendance was not sought. The attention of the State Board of Health was first called to this outbreak about June 10 by physicians of Menahga and Sebeka. Most cases first studied presented more or less marked meningeal symptoms; many cases recovered without apparent muscular impairment after a brief illness of 4 or 5 days. Children make up most of the cases, but few adults being attacked. Multiple cases occurred in a large number of families and contact was traced in a large percentage of cases. More than 100 cases have been studied by representatives of the State Board of Health (300 cases estimated) and but 10 deaths have occurred. A careful clinical study of cases combined with laboratory examinations of more than 40 spinal fluids, together with autopsy studies in one case, leads to the opinion that this is an outbreak of polio-enceph-

alo-mylitis, i. e., the disease is essentially epidemic anterior poliomyelitis with the encephalitic type predominating."

## BOOK REVIEWS

**SOME AIDS IN THE RECORD KEEPING OF ANO-RECTAL CASES:** Ralph W. Jackson (Minutes Amer. Proct. Soc., April, 1920). The writer emphasized the influence of the American Proctologic Society in raising the study and treatment of diseases of the rectum and anus from the domain of quackery to that of a dignified and recognized specialty, and its further influence in securing national recognition in the establishment of the section on Gastro-Enterology and Proctology in the A. M. A. He said that this accomplishment should be no indication for abatement, but rather for increase in the activity of the society. The writer further said that the proctologist may legitimately confine his work to the anus, rectum and sigmoid, or may include more proximal portions of the alimentary canal. For the standardization of the records of the distal proctologist, he presented a set of five diagrammatic rubber stamps, which he uses, and explained them to the fellows by means of corresponding diagrams in blackboard form. No. 1 consists of two concentric segmented circles representing the external and internal hemorrhoidal zones. No. 2 shows the anus and buttocks in the lithotomy position. No. 3 shows the anus and rectum and adjacent structures in transverse vertical section. Nos. 4 and 5 show the same in antero-posterior vertical section in either sex. All these are purely diagrammatic, and, by a system of marks, the writer showed how practically all ano-rectal pathology could be recorded with very little effort. These diagrams are also most useful in reports to physicians of referred cases.

**GEORGE M. STERNBERG.** A Biography. Martha L. Sternberg, American Medical Association, 1920.

The life and work of General Sternberg should serve to stimulate the present and future generations of the medical profession in the field of preventive medicine.

The book furnishes a record of his military and scientific career and while being of special interest to medical officers of the army it can be read with profit by all civilian physicians.

—EVERETT K. GEER.

**Coagulin-Cuba Omitted from New and Nonofficial Remedies:**—Coagulin-Ciba was admitted to New and Nonofficial Remedies in 1915. It is stated to be an extract prepared from blood platelets and to contain thromboplastic substances mixed with lactose. Extensive clinical reports appeared to justify its acceptance for New and Nonofficial Remedies. However, in 1918, Dr. Arthur D. Hirschfelder reported to

the Council that a number of specimens of Coagulin-Ciba failed to accelerate the coagulation time of blood. The results of Dr. Hirschfelder were subsequently confirmed by Dr. P. J. Hanzlik, who made an extensive investigation of the effects of Coagulin-Ciba at the invitation of the Council's Therapeutic Research Committee. Since the evidence indicates that Coagulin-Ciba has little efficacy, if any, as a hemostatic, the Council directed its omission from New and Nonofficial Remedies. (Abstracted from Reports Council on Pharmacy and Chemistry, 1920, p. 53.)

### EPIDEMIC RESPIRATORY DISEASE

**THE PNEUMONIAS AND OTHER INFECTIONS OF THE RESPIRATORY TRACT ACCOMPANYING INFLUENZA AND MEASLES.** By Eugene L. Opie, M. D., Francis G. Blake, M. D., James C. Small, M. D., Thomas M. Rivers, M. D.

This book is an expression of the work done by a group of medical officers assigned in July, 1918 by the Surgeon General to study the pneumonias prevalent in the army.

The commission began its work at Camp Funston. At the end of August, 1918, it was transferred to Camp Pike, which, during the encampment, ranked third in death rate from lobar pneumonia and fourth in death rate from broncho-pneumonia among 32 camps established in this country.

The contents consists of seven chapters and an appendix. In consecutive order they deal with the etiology of influenza, clinical features and bacteriology of influenza and its associated purulent bronchitis and pneumonia, secondary infection in the ward treatment of influenza and pneumonia, the pathology and bacteriology of pneumonia following influenza, secondary infection in the ward treatment of measles, the pathology and bacteriology following measles. A summary of the investigation and the conclusions reached are incorporated in the seventh chapter. The appendix gives an outline of the experimental inoculation of monkeys with bacillus influenza and micro-organisms isolated from the pneumonias of influenza.

In the various fields of experiment and observation each chapter is a logical treatise describing in their order the employed methods, the recorded observations, the post-mortem findings and finally the discussion and summary of conclusions. Numerous clinical case reports together with autopsy findings make the work most valuable. A well collated bibliography, numerous charts, 33 figures, 77 elaborate tables are enviable factors of correlation especially in the most comprehensive study ever undertaken of the epidemic respiratory disease. The keystone of this investigation forms the chapter on the pathology and bacteriology of pneumonia following influenza. To attempt to write satisfactorily in a brief review the contents of a work which already has been reduced to essentials is to try the impossible. And,

therefore, anyone interested not in the epidemic respiratory disease only, but in any inflammatory pulmonary condition will profit immensely by reading the original.

J. A. LEPAK.

### PHYSIOLOGY AND BIOCHEMISTRY IN MODERN MEDICINE.

By J. J. R. Macleod, M. B.

Since the third edition appears only two years after the first, this work undoubtedly must be in great demand. Physiology and biochemistry are forcing themselves more and more prominently in all advances of modern medicine. Medical men, as never before, think more seriously in terms of functions. The keynote in this work is emphasis on the application of physiology and biochemistry to the practice of medicine.

In the third edition the section on the nervous system has been rewritten. The section dealing with the chemistry of respiration has been enlarged and revised by the additions of the clinical application. Additional chapters appear here and there dealing with the practical problems, such as, the measurement of the functional capacity of the heart, the principles of ventilation and therapeutic value of oxygen, vitamins, the capillary circulation, surgical shock, and the interpretation of the polysphygmograms. Doubtless one of the most interesting, both from a practical and theoretical viewpoint is the section dealing with the endocrine glands. The work is indispensable in the practice of medicine.

J. A. LEPAK.

### ANNUAL REPRINT OF THE REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR 1920.

Cloth. Price, postpaid, \$1.00. Pp. 72. Chicago; American Medical Association, 1921.

While New and Nonofficial Remedies consists in part of descriptions of those proprietary medicines which the Council deemed worthy of consideration by the medical profession, the Annual Reports of the Council on Pharmacy and Chemistry describe the preparations which the Council finds unworthy of recognition. In addition, these annual reports contain other announcements of the Council.

The present volume contains a number of interesting reports. Thus we find a statement which makes it clear that many of the large pharmaceutical houses are definitely opposed to the work of the Council and will remain antagonistic until a very large proportion of the medical profession will give the Council their active support. The volume also contains a report on some digitalis preparations which the Council examined and declared to be pharmacopoeial digitalis products and therefore do not require the control of the Council.

Of the reports on proprietary medicines found unacceptable for New and Nonofficial Remedies there are reports on the following which, because of the publicity given the products by their exploiters, will be of special interest to physicians: Platt's Chlor-

ides, Syrup Leptinol (formerly Syrup Balsamea), Sukro-Serum Spiroclide, Libradol, Supsalvs.

Of considerable interest are reports on a number of products which were admitted to New and Non-official Remedies on the basis of evidence which at the time seemed to indicate the products to have therapeutic merit, but which did not stand the test of time and which therefore have been omitted from the 1921 edition of New and Nonofficial Remedies. These reports give evidence that great care is taken to keep New and Nonofficial Remedies up to date.

Those who are not familiar with the methods of the Council in the examination of new medicaments or who may even have been inclined to look upon the

acceptance or rejection of a medicament by the Council as a somewhat perfunctory procedure, should read the report of "Chloryptus"—a chlorinated eucalyptus oil. Its proprietor believed it to be a most efficient wound antiseptic. He presented to the Council many lengthy reports of laboratory tests and of clinical trial. The Council found the evidence inconclusive and refused recognition to the product. The discoverer of Chloryptus apparently has accepted the conclusion of the Council—at all events it is not being pushed—and thus many a physician is spared the temptation of experimenting with a new drug which in the end will but add to his long list of medicaments which have been tried and found wanting.



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